

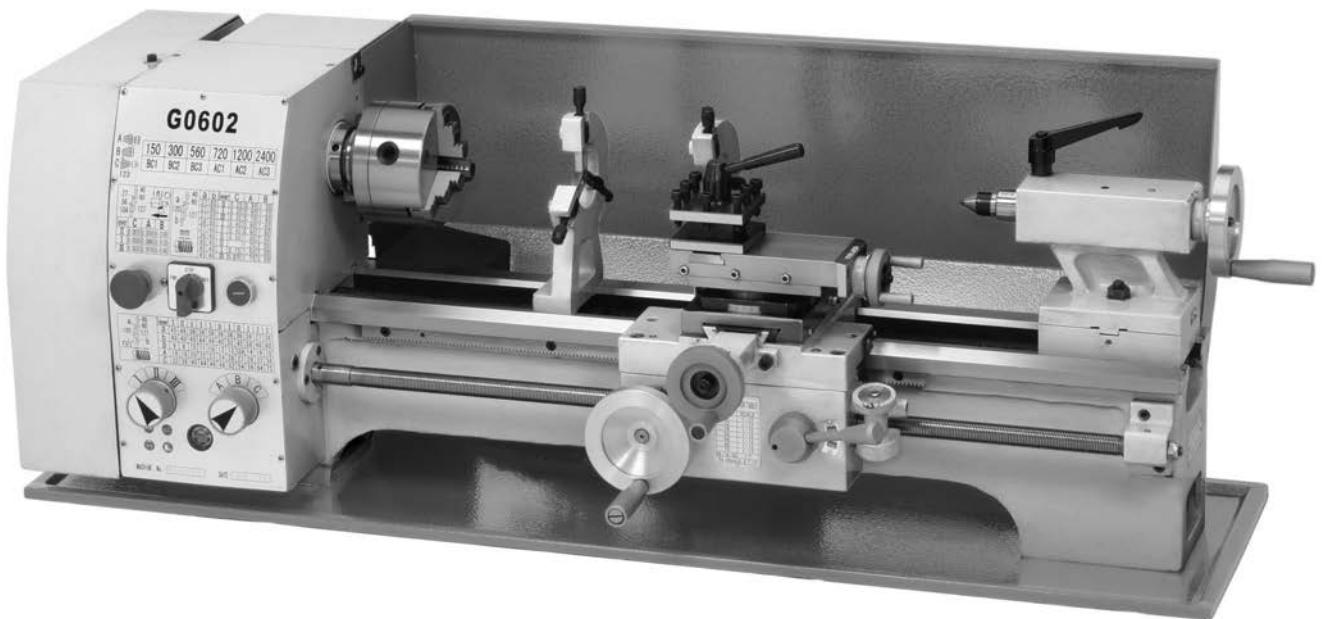


# MODEL G0602/G0752

## 10" X 22" BENCHTOP LATHE

### OWNER'S MANUAL

*(For models manufactured since 03/17)*



**G0602 Shown**

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V2.04.17



## **WARNING!**

**This manual provides critical safety instructions on the proper setup, operation, maintenance, and service of this machine/tool. Save this document, refer to it often, and use it to instruct other operators.**

**Failure to read, understand and follow the instructions in this manual may result in fire or serious personal injury—including amputation, electrocution, or death.**

**The owner of this machine/tool is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, cutting/sanding/grinding tool integrity, and the usage of personal protective equipment.**

**The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.**



## **WARNING!**

**Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:**

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

**Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.**

# Table of Contents

<b>INTRODUCTION .....</b>	<b>3</b>	<b>SECTION 4: OPERATIONS .....</b>	<b>25</b>
Machine Description .....	3	Operation Overview .....	25
Contact Info.....	3	Chuck & Faceplate Mounting.....	26
Manual Accuracy .....	3	Installation & Removal Devices .....	26
Model G0602 Identification .....	4	Chuck Installation.....	27
Model G0752 Identification .....	5	Chuck Removal.....	28
Controls & Components.....	6	Changing Jaw Set.....	28
Model G0602 Control Panel .....	6	Scroll Chuck Clamping .....	29
Model G0752 Control Panel .....	6	4-Jaw Chuck .....	30
Quick Change Gearbox .....	6	Faceplate .....	31
Carriage .....	7	Tailstock.....	32
Tailstock.....	7	Positioning Tailstock .....	32
Change Gears, Pulleys, V-Belt.....	7	Using Quill.....	32
Machine Data Sheet .....	8	Installing Tooling.....	32
<b>SECTION 1: SAFETY .....</b>	<b>10</b>	Removing Tooling.....	33
Safety Instructions for Machinery .....	10	Offsetting Tailstock .....	33
Additional Safety for Metal Lathes.....	12	Aligning Tailstock to Spindle Centerline .....	34
Glossary of Terms .....	13	<b>Centers .....</b>	<b>36</b>
<b>SECTION 2: POWER SUPPLY .....</b>	<b>14</b>	Dead Centers.....	36
Availability .....	14	Live Centers.....	36
Full-Load Current Rating .....	14	Mounting Dead Center in Spindle.....	36
Circuit Requirements .....	14	Removing Center from Spindle.....	37
Grounding & Plug Requirements .....	15	Mounting Center in Tailstock .....	37
Extension Cords.....	15	Removing Center from Tailstock .....	37
<b>SECTION 3: SETUP .....</b>	<b>16</b>	Mounting Workpiece Between Centers .....	38
Unpacking .....	16	Steady Rest .....	38
Needed for Setup.....	16	Follow Rest .....	39
Inventory .....	17	Carriage & Slide Locks .....	39
Cleanup.....	18	Compound Rest.....	39
Site Considerations.....	19	Four-Way Tool Post.....	40
Lifting & Placing .....	20	Installing Tool.....	40
Leveling & Mounting .....	21	Aligning Cutting Tool with Spindle Centerline...	40
Leveling.....	21	Manual Feed .....	41
Mounting .....	21	Spindle Speed.....	42
Assembly .....	22	Determining Spindle Speed .....	42
Lubricating Lathe .....	22	Setting Spindle Speed .....	42
Power Connection.....	22	G0602 Configuration Examples.....	42
Connecting Power.....	22	G0752 Configuration Example.....	43
Disconnecting Power .....	22	<b>Power Feed.....</b>	<b>44</b>
Test Run .....	22	Setting Power Feed Rate.....	45
Spindle Break-In .....	24	<b>Threading.....</b>	<b>46</b>
Recommended Adjustments.....	24	Headstock Threading Controls .....	46
		Apron Threading Controls.....	47
		Thread Dial Chart .....	47

**SECTION 5: ACCESSORIES ..... 49****SECTION 6: MAINTENANCE..... 51**

Schedule .....	51
Ongoing .....	51
Daily, Before Operations.....	51
Daily, After Operations.....	51
Annually .....	51
Cleaning/Protecting.....	51
Lubrication .....	52
Quick-Change Gearbox .....	52
Ball Oilers.....	53
Leadscrew & Carriage Rack .....	54
Bedways .....	54
Compound Slide .....	54
Change Gears.....	55
Machine Storage.....	56

**SECTION 7: SERVICE ..... 57**

Troubleshooting .....	57
Operation .....	58
Backlash Adjustment .....	60
Compound Rest.....	60
Cross Slide.....	60
Gib Adjustment .....	61
Half Nut Adjustment.....	62
Leadscrew Shear Pin Replacement .....	62
V-Belt Tension & Replacement.....	63
Tensioning V-Belt.....	63
Replacing V-Belt .....	64
Timing Belt Tension & Replacement .....	65
Tensioning Timing Belt .....	65
Replacing Timing Belt.....	65

**SECTION 8: WIRING..... 66**

Wiring Safety Instructions .....	66
G0602 Wiring Diagram .....	67
G0602 Electrical Components .....	68
G0752 Wiring Box Diagram .....	69
G0752 Wiring Box Components .....	70
G0752 Control Panel Wiring Diagram .....	71
G0752 Control Panel Components.....	72
G0752 Motor Wiring Diagram .....	73

**SECTION 9: PARTS ..... 74**

Spindle & Drive Belt.....	74
Apron .....	76
Tool Post & Compound Rest .....	77
Tailstock.....	78
Bed & Leadscrew.....	79
Steady Rest & Follow Rest.....	80
G0602 Motor & Electrical.....	81
G0752 Motor & Electrical.....	82
Change Gears.....	83
Gearbox .....	84
Cross Slide & Carriage .....	86

**SECTION 10: APPENDIX..... 89**

G0602 Charts.....	89
G0752 Charts.....	90

**WARRANTY AND RETURNS ..... 93**



# INTRODUCTION

## Machine Description

The metal lathe is used to remove material from a rotating workpiece, which is held in place on the spindle with a chuck or faceplate. The cutting tool is mounted on the carriage or tailstock and moved against the spinning workpiece to perform the cut.

Typical metal lathe cutting operations include facing, turning, parting, drilling, reaming, grooving, knurling, and threading. There are a wide variety of tools and workpiece holding devices available for each of these operations.

Models G0602 and G0752 both require setting gearbox dial positions and positioning V-belts to select the spindle speed. However, the Model G0752 features an electronic variable-speed control and digital RPM display that make it possible to select speeds within the selected range while the machine is running.

## Contact Info

We stand behind our machines! If you have questions or need help, contact us with the information below. Before contacting, make sure you get the **serial number** and **manufacture date** from the machine ID label. This will help us help you faster.

Grizzly Technical Support  
1815 W. Battlefield  
Springfield, MO 65807  
Phone: (570) 546-9663  
Email: techsupport@grizzly.com

We want your feedback on this manual. What did you like about it? Where could it be improved? Please take a few minutes to give us feedback.

Grizzly Documentation Manager  
P.O. Box 2069  
Bellingham, WA 98227-2069  
Email: manuals@grizzly.com

Model G0602/G0752 (Mfd. Since 03/17)




## Manual Accuracy

We are proud to provide a high-quality owner's manual with your new machine!

We made every effort to be exact with the instructions, specifications, drawings, and photographs in this manual. Sometimes we make mistakes, but our policy of continuous improvement also means that **sometimes the machine you receive is slightly different than shown in the manual.**

If you find this to be the case, and the difference between the manual and machine leaves you confused or unsure about something, check our website for an updated version. We post current manuals and manual updates for free on our website at **www.grizzly.com**.

Alternatively, you can call our Technical Support for help. Before calling, make sure you write down the **Manufacture Date** and **Serial Number** from the machine ID label (see below). This information is required for us to provide proper tech support, and it helps us determine if updated documentation is available for your machine.

		MODEL GXXXX MACHINE NAME	
SPECIFICATIONS		WARNING!	
Motor:	To reduce risk of serious injury when using this machine:		
Specification:	1. Read manual before operation.		
Specification:	2. Wear safety glasses and respirator.		
Specification:	3. Make sure the motor has stopped and disconnect power before adjustments, maintenance, or service.		
Specification:	4. Make sure the motor has stopped and disconnect power before adjustments, maintenance, or service.		
Weight:	5. DO NOT expose to rain or dampness.		
	6. DO NOT modify this machine in any way.		
	7.		
	8.		
	9.		
	10. Maintain machine carefully to prevent accidents.		

Manufactured for Grizzly in Taiwan

# Model G0602 Identification

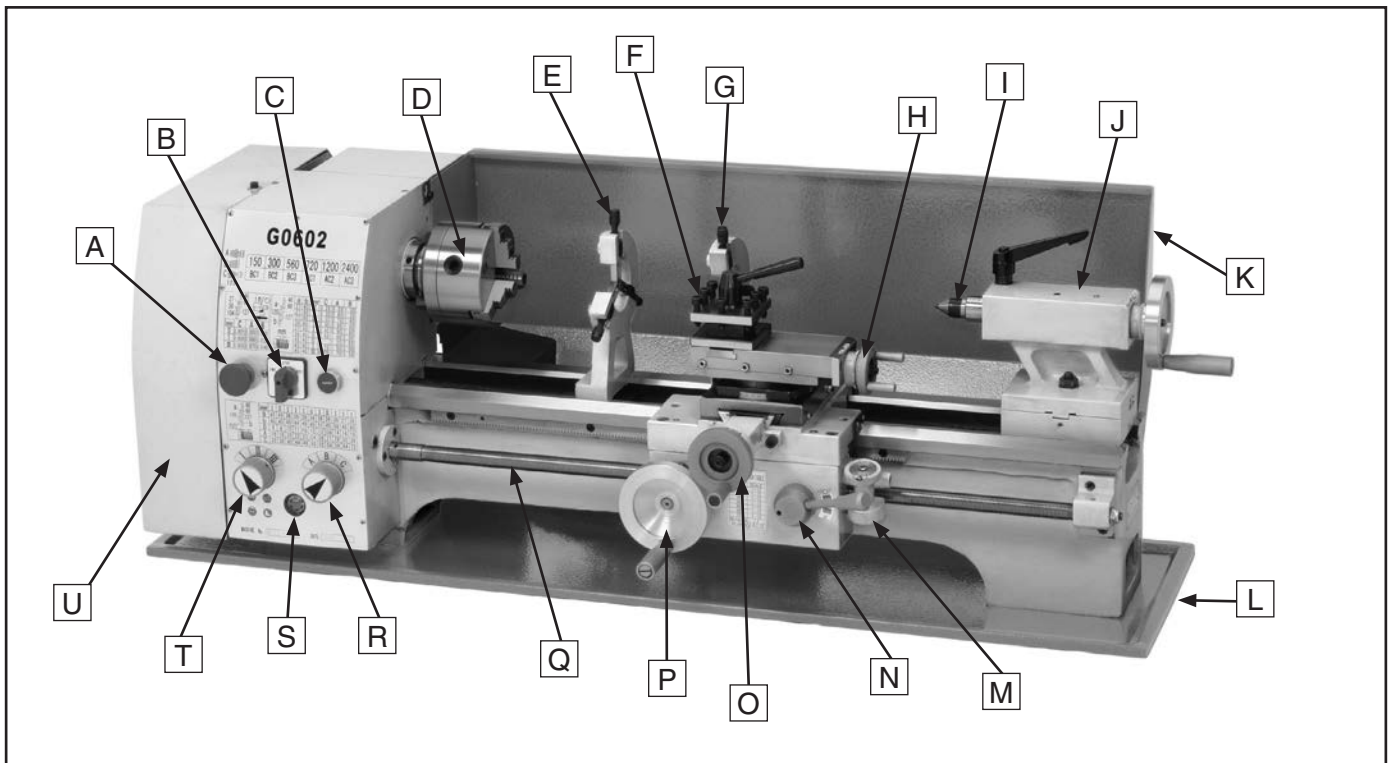


Figure 1. G0602 identification.

- |                             |                                      |
|-----------------------------|--------------------------------------|
| A. Emergency Stop Button    | L. Chip Tray                         |
| B. Spindle Direction Switch | M. Thread Dial                       |
| C. ON Button                | N. Half Nut Lever                    |
| D. 3-Jaw Chuck              | O. Cross Slide Handwheel             |
| E. Steady Rest              | P. Carriage Handwheel                |
| F. 4-Way Tool Post          | Q. Leadscrew                         |
| G. Follow Rest              | R. Alpha Gearbox Dial                |
| H. Compound Rest Handwheel  | S. Gearbox Oil Level Sight Glass     |
| I. MT#3 Dead Center         | T. Numeric Gearbox Dial              |
| J. Tailstock                | U. Change Gear and Belt Safety Cover |
| K. Back Splash              |                                      |

## **!WARNING**

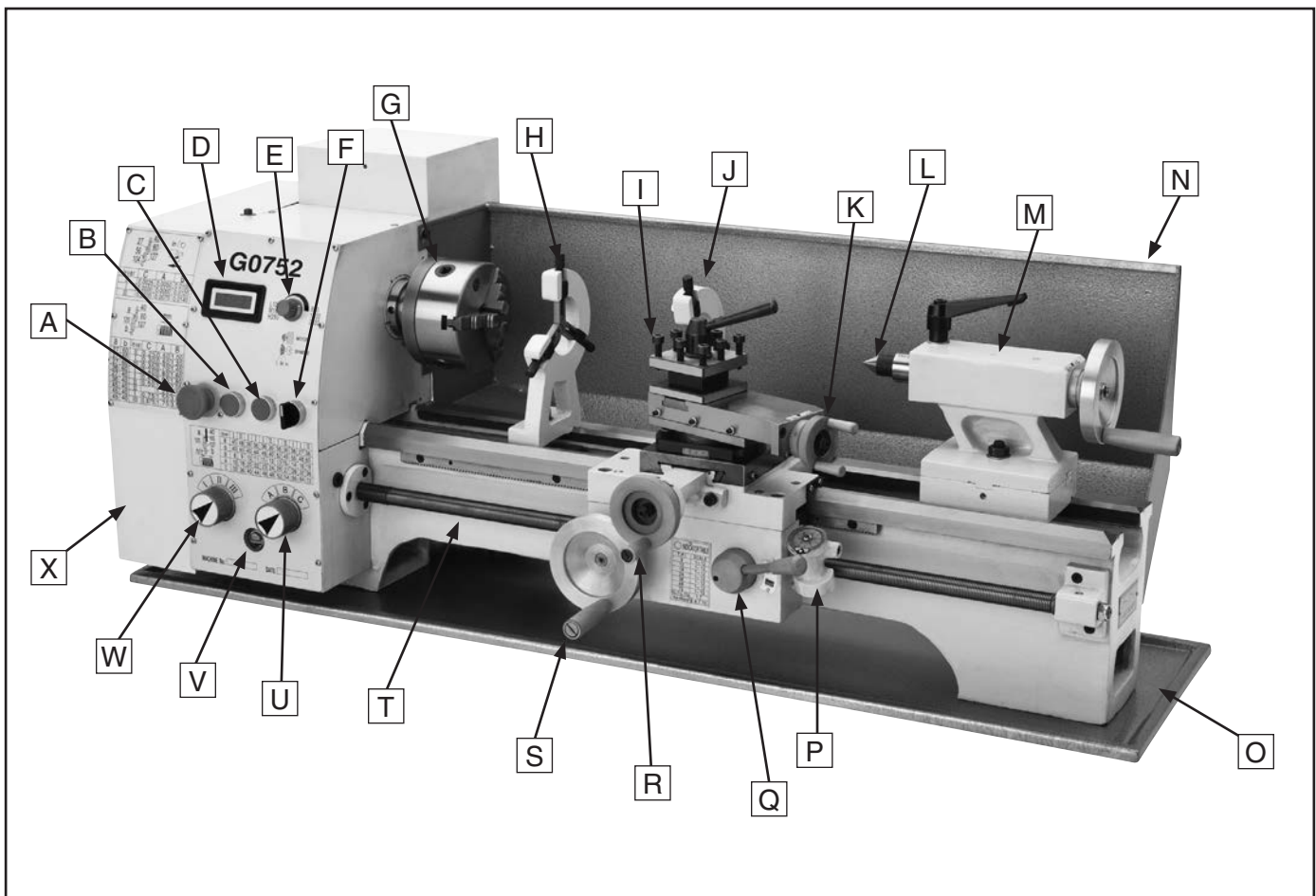
Serious personal injury could occur if you connect the machine to power before completing the setup process. DO NOT connect power until instructed to do so later in this manual.

## **!WARNING**

Untrained users have an increased risk of seriously injuring themselves with this machine. Do not operate this machine until you have understood this entire manual and received proper training.



# Model G0752 Identification



**Figure 2.** G0752 identification.

- |                                     |   |
|-------------------------------------|---|
| <b>A.</b> Emergency Stop Button     | <b>M.</b> Tailstock                         |
| <b>B.</b> ON Button                 | <b>N.</b> Back Splash                       |
| <b>C.</b> OFF Button                | <b>O.</b> Chip Tray                         |
| <b>D.</b> Spindle Speed RPM Display | <b>P.</b> Thread Dial                       |
| <b>E.</b> Spindle Speed Dial        | <b>Q.</b> Half Nut Lever                    |
| <b>F.</b> Spindle Direction Switch  | <b>R.</b> Cross Slide Handwheel             |
| <b>G.</b> 3-Jaw Chuck               | <b>S.</b> Carriage Handwheel                |
| <b>H.</b> Steady Rest               | <b>T.</b> Leadscrew                         |
| <b>I.</b> 4-Way Tool Post           | <b>U.</b> Alpha Gearbox Dial                |
| <b>J.</b> Follow Rest               | <b>V.</b> Gearbox Oil Level Sight Glass     |
| <b>K.</b> Compound Rest Handwheel   | <b>W.</b> Numeric Gearbox Dial              |
| <b>L.</b> MT#3 Dead Center          | <b>X.</b> Change Gear and Belt Safety Cover |

## **!WARNING**

Serious personal injury could occur if you connect the machine to power before completing the setup process. **DO NOT** connect power until instructed to do so later in this manual.

## **!WARNING**

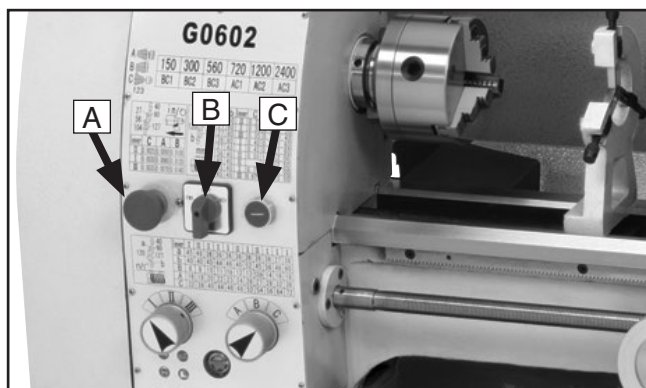
Untrained users have an increased risk of seriously injuring themselves with this machine. Do not operate this machine until you have understood this entire manual and received proper training.



# Controls & Components

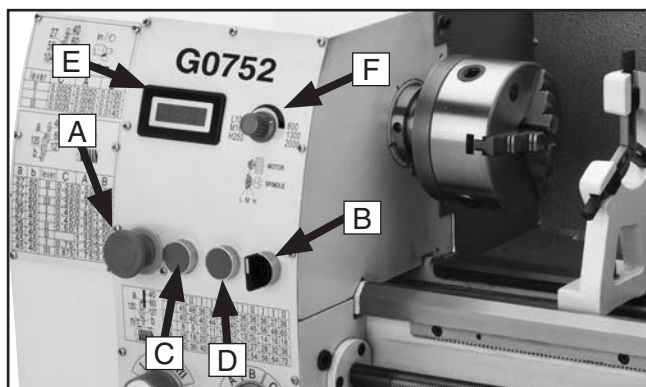
Refer to **Figures 3–8** and the following descriptions to become familiar with the basic controls of this lathe.

## Model G0602 Control Panel



**Figure 3.** Model G0602 control panel.

## Model G0752 Control Panel

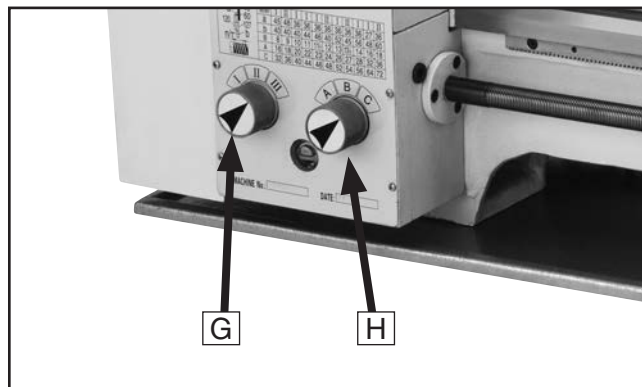


**Figure 4.** Model G0752 control panel.

- A. Emergency STOP Button:** Cuts power to the motor and control panel when pressed. Remains depressed until reset by twisting clockwise.
- B. Spindle Switch:** Starts, stops, and reverses spindle rotation.
- C. ON Button:** Enables spindle rotation.

- D. OFF Button:** Stops spindle rotation.
- E. Spindle Speed RPM Display:** Shows a digital readout of the spindle speed.
- F. Spindle Speed Dial:** Controls the variable spindle speed.

## Quick Change Gearbox



**Figure 5.** Gearbox dials.

- G. Numeric Gearbox Dial:** Controls the leadscrew for threading and feeding operations. To make a selection, rotate the dial to the corresponding number displayed on the threading or feed charts.
- H. Alpha Gearbox Dial:** Controls the leadscrew for threading and feeding operations. To make a selection, rotate the dial to the corresponding letter displayed on the threading or feed charts.





## Carriage

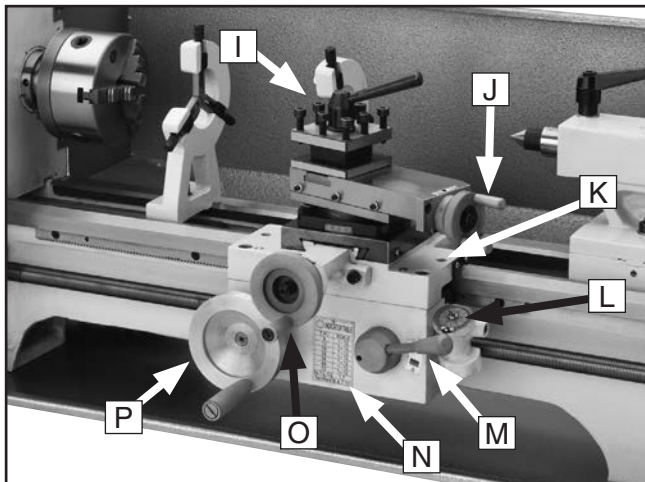


Figure 6. Carriage controls.

- I. 4-Way Tool Post:** Holds up to four cutting tools at once that can be individually indexed to the workpiece.
- J. Compound Rest Handwheel:** Moves the tool toward and away from the workpiece at the preset angle of the compound rest.
- K. Carriage Lock:** Secures the carriage for greater rigidity when it should not move.
- L. Thread Dial:** Indicates when to engage the half nut during threading operations.
- M. Half Nut Lever:** Engages/disengages half nut for power feed and threading operations.
- N. Thread Chart:** Indicates which thread dial mark to use when engaging the half nut for specific inch thread pitches.
- O. Cross Slide Handwheel:** Moves the cross slide toward and away from the workpiece.
- P. Carriage Handwheel:** Moves the carriage along the bedway.
- Q. Tailstock Quill:** Moves a tool or center mounted in the tailstock toward or away from the workpiece.
- R. Tailstock Quill Lock Lever:** Secures the quill position.
- S. Tailstock Lock Nut:** Secures the tailstock to the bedway.

## Tailstock

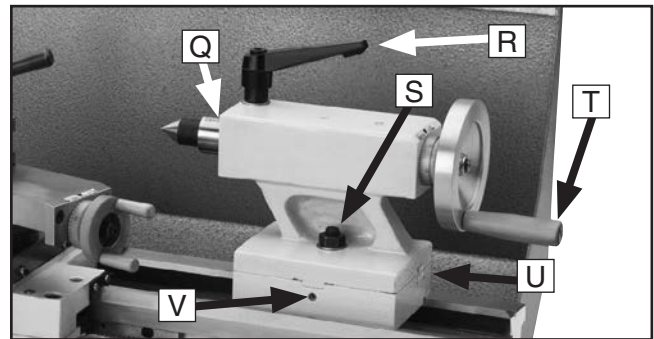


Figure 7. Tailstock controls.

- T. Tailstock Quill Handwheel:** Controls the movement of the quill.
- U. Offset Scale:** Indicates the relative distance of tailstock offset from the spindle centerline.
- V. Tailstock Offset Set Screw (1 of 2):** Adjusts the tailstock offset left or right from the spindle centerline.

## Change Gears, Pulleys, V-Belt

- W. Change Gears:** The configuration of the change gears for power feed, inch, and metric threading controls the leadscrew speed.
- X. Pulleys:** The position of the V-belt on the pulleys controls the spindle speed.
- Y. V-Belt:** Transfers power from the motor pulley to the spindle pulley. Model G0602 uses two V-belts. Model G0752 uses one V-belt.
- Z. Timing-Belt:** (G0602) Transfers power from the motor to the secondary drive pulley.

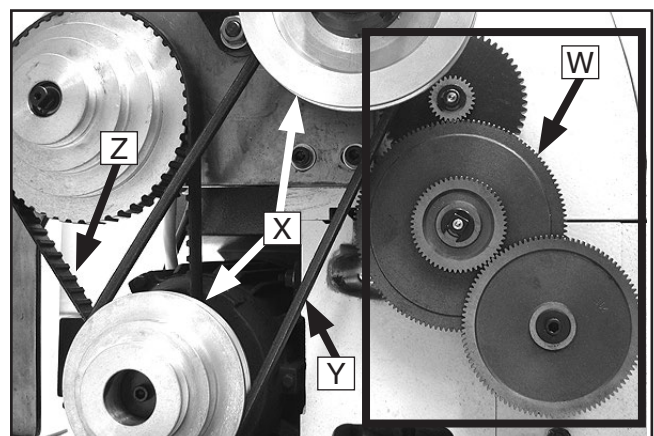


Figure 8. Change gears and pulleys (Model G0602 shown).





# MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

## MODEL G0602, G0752 10" x 22" Bench Top Metal Lathe

Model Number	G0602		G0752	
Product Dimensions				
Weight	330 lbs.			
Width/Depth/Height	46" x 22" x 16 <sup>5</sup> / <sub>8</sub> "		50 <sup>1</sup> / <sub>2</sub> " x 22" x 19 <sup>5</sup> / <sub>8</sub> "	
Foot Print (Width/Depth)	47 <sup>1</sup> / <sub>2</sub> " x 12 <sup>1</sup> / <sub>2</sub> "			
Shipping Dimensions				
Type	Wood Crate			
Content	Machine			
Weight	432 lbs.		453 lbs.	
Width /Depth/Height	55" x 23" x 22"			
Electrical				
Power Requirement	110V, Single-Phase, 60 Hz			
Minimum Circuit Size	20A		15A	
Switch	Forward & Reverse Button Switches			
Cord Length	5 ft.			
Cord Gauge	16 AWG		16 AWG	
Plug Included	Yes			
Included Plug Type	NEMA 5-15			
Main Motor				
Type	TEFC Capacitor-Start Induction		TEFC Induction	
Horsepower	1 HP		1 HP	
Phase	Single-Phase		3-Phase	
Amps	13.6A		12A	
Speed	1725 RPM			
Power Transfer	Cogged Belt Drive			
Bearings	Shielded & Permanently Sealed			
Operation Information				
Swing Over Bed	9 <sup>5</sup> / <sub>8</sub> "			
Distance Between Centers	22 in.			
Swing Over Cross Slide	6 <sup>1</sup> / <sub>8</sub> in.			
Swing Over Saddle	6 <sup>1</sup> / <sub>8</sub> in.			
Maximum Tool Bit Size	½ in.			
Compound Travel	3½			
Carriage Travel	18½ in.			
Cross Slide Travel	6½ in.			



Model Number	G0602		G0752	
Headstock Information				
Spindle Bore	1"			
Spindle Size	1¾"			
Spindle Taper	MT#4			
Spindle Threads	8 TPI			
Number of Spindle Speeds	6		Variable	
Range of Spindle Speeds	150 – 2400 RPM		100 – 800, 160 – 1300, 250 – 2000 RPM	
Spindle Type	Threaded			
Spindle Bearings	Tapered Roller			
Tailstock Information				
Tailstock Quill Travel	2½"			
Tailstock Taper	MT#3			
Tailstock Barrel Diameter	1.25"			
Threading Information				
Number of Longitudinal Feeds	9			
Range of Longitudinal Feeds	0.0025 – 0.0140 in./rev.			
Number of Inch Threads	33			
Range of Inch Threads	8 – 72 TPI			
Number of Metric Threads	26			
Range of Metric Threads	0.25 – 3.50 mm			
Dimensions				
Bed Width	6⅞ in.			
Leadscrew Diameter	¾ in.			
Leadscrew TPI	12 TPI			
Leadscrew Length	34"			
Steady Rest Capacity	¼" – 2"			
Follow Rest Capacity	¼" – 2"			
Faceplate Size	8 in.			
Construction				
Base	Cast Iron			
Headstock	Cast Iron			
Headstock Gears	Steel			
Bed	Hardened and Precision-Ground Cast Iron			
Stand	Cast Iron			
Paint	Epoxy			
Other				
Country of Origin	China			
Warranty	1 Year			
Serial Number Location	ID Label on Headstock			
Approximate Assembly & Setup Time	1 Hour			





# SECTION 1: SAFETY

## For Your Own Safety, Read Instruction Manual Before Operating This Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures. Always use common sense and good judgment.



Indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices.

**NOTICE**

This symbol is used to alert the user to useful information about proper operation of the machine.

## Safety Instructions for Machinery



**OWNER'S MANUAL.** Read and understand this owner's manual **BEFORE** using machine.

**TRAINED OPERATORS ONLY.** Untrained operators have a higher risk of being hurt or killed. Only allow trained/supervised people to use this machine. When machine is not being used, disconnect power, remove switch keys, or lock-out machine to prevent unauthorized use—especially around children. Make your workshop kid proof!

**DANGEROUS ENVIRONMENTS.** Do not use machinery in areas that are wet, cluttered, or have poor lighting. Operating machinery in these areas greatly increases the risk of accidents and injury.

**MENTAL ALERTNESS REQUIRED.** Full mental alertness is required for safe operation of machinery. Never operate under the influence of drugs or alcohol, when tired, or when distracted.

**ELECTRICAL EQUIPMENT INJURY RISKS.** You can be shocked, burned, or killed by touching live electrical components or improperly grounded machinery. To reduce this risk, only allow qualified service personnel to do electrical installation or repair work, and always disconnect power before accessing or exposing electrical equipment.

**DISCONNECT POWER FIRST.** Always disconnect machine from power supply **BEFORE** making adjustments, changing tooling, or servicing machine. This prevents an injury risk from unintended startup or contact with live electrical components.

**EYE PROTECTION.** Always wear ANSI-approved safety glasses or a face shield when operating or observing machinery to reduce the risk of eye injury or blindness from flying particles. Everyday eyeglasses are **NOT** approved safety glasses.



# WARNING

**WEARING PROPER APPAREL.** Do not wear clothing, apparel or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to reduce risk of slipping and losing control or accidentally contacting cutting tool or moving parts.

**HAZARDOUS DUST.** Dust created by machinery operations may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material. Always wear a NIOSH-approved respirator to reduce your risk.

**HEARING PROTECTION.** Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

**REMOVE ADJUSTING TOOLS.** Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

**USE CORRECT TOOL FOR THE JOB.** Only use this tool for its intended purpose—do not force it or an attachment to do a job for which it was not designed. Never make unapproved modifications—modifying tool or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

**AWKWARD POSITIONS.** Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

**CHILDREN & BYSTANDERS.** Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

**GUARDS & COVERS.** Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly **BEFORE** operating machine.

**FORCING MACHINERY.** Do not force machine. It will do the job safer and better at the rate for which it was designed.

**NEVER STAND ON MACHINE.** Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

**STABLE MACHINE.** Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

**USE RECOMMENDED ACCESSORIES.** Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

**UNATTENDED OPERATION.** To reduce the risk of accidental injury, turn machine **OFF** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

**MAINTAIN WITH CARE.** Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

**DAMAGED PARTS.** Regularly inspect machine for damaged, loose, or mis-adjusted parts—or any condition that could affect safe operation. Immediately repair/replace **BEFORE** operating machine. For your own safety, **DO NOT** operate machine with damaged parts!

**MAINTAIN POWER CORDS.** When disconnecting cord-connected machines from power, grab and pull the plug—**NOT** the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

**EXPERIENCING DIFFICULTIES.** If at any time you experience difficulties performing the intended operation, stop using the machine! Contact our Technical Support at (570) 546-9663.



# Additional Safety for Metal Lathes

## WARNING

Serious injury or death can occur from getting entangled in, crushed between, or struck by rotating parts on a lathe! Unsecured tools or workpieces that fly loose from rotating objects can also strike nearby operators with deadly force. To minimize the risk of getting hurt or killed, anyone operating this machine **MUST** completely heed the hazards and warnings below.

**CLOTHING, JEWELRY & LONG HAIR.** Tie back long hair, remove jewelry, and do not wear loose clothing or gloves. These can easily get caught on rotating parts and pull you into lathe.

**ROTATING PARTS.** Always keep hands and body at a safe distance from rotating parts—especially those with projecting surfaces. Never hold anything against rotating workpiece, such as emery cloth, that can pull you into lathe.

**GUARDING.** Guards and covers protect against entanglement or flying objects. Always ensure they are properly installed while machine is running.

**ADJUSTMENT TOOLS.** Remove all chuck keys, wrenches, and adjustment tools before turning lathe **ON**. A tool left on the lathe can become a deadly projectile when spindle is started.

**SAFE CLEARANCES.** Before starting spindle, verify workpiece has adequate clearance by hand-rotating it through its entire range of motion.

**NEW SETUPS.** Test each new setup by starting spindle rotation at the lowest speed and standing to the side of the lathe until workpiece reaches full speed and you can verify safe rotation.

**SPINDLE SPEEDS.** Using spindle speeds that are too fast for the workpiece or clamping equipment can cause rotating parts to come loose and strike nearby people with deadly force. Always use slow spindle speeds with large or non-concentric workpieces. Never exceed rated RPM of the chuck.

**LONG STOCK SAFETY.** Long stock can whip violently if not properly supported. Always support

**SECURE WORKPIECE.** An improperly secured workpiece can fly off spindle with deadly force. Make sure workpiece is properly secured before starting the lathe.

**CHUCKS.** Chucks can be heavy and difficult to hold. During installation and removal, protect your hands and precision bed ways by using a chuck cradle or piece of plywood over the bed ways. Use lifting equipment, as necessary, for large chucks.

**STOPPING SPINDLE.** Always allow spindle to completely stop on its own, or use a brake, if provided. Never put hands or another object on a spinning workpiece to make it stop faster.

**CRASHING.** A serious explosion of metal parts can occur if cutting tool or other lathe component hits rotating chuck or a projecting part of workpiece. Resulting metal fragments can strike nearby people and lathe will be seriously damaged. To reduce risk of crashing, **ALWAYS** release automatic feeds after use, **NEVER** leave lathe unattended, and **CHECK** all clearances before starting lathe.

**COOLANT SAFETY.** Coolant can become very toxic through prolonged use and aging. To minimize toxicity, change coolant regularly. When using, position nozzle properly to avoid splashing operator or causing a slipping hazard on floor.

**TOOL SELECTION.** Cutting with incorrect or dull tooling increases risk of injury from broken or dislodged components, or as a result of extra force required for operation. Always use sharp tooling that is right for the job.

**SANDING/POLISHING.** To reduce risk of entan-



# Glossary of Terms

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The following is a list of common definitions, terms and phrases used throughout this manual as they relate to this lathe and metalworking in general. Become familiar with these terms for assembling, adjusting or operating this machine. Your safety is **VERY** important to us at Grizzly!

**Arbor:** A machine shaft that supports a cutting tool.

**Backlash:** Wear in a screw or gear mechanism that may result in slippage, vibration, and loss of tolerance.

**Carriage:** A main housing that consists of the apron and the saddle.

**Cross Slide:** A fixture attached to the lathe carriage that holds the compound rest and can be moved in and out.

**Compound Rest:** A fixture attached to the cross slide that holds the tool holder and can be moved in and out.

**Cutting Speed:** The distance a point on a cutter moves in one minute, expressed in meters or feet per minute.

**Dial Indicator:** An instrument used in setup and inspection work that shows on a dial the amount of error in size or alignment of a part.

**Facing:** In lathe work, cutting across the end of a workpiece, usually to machine a flat surface.

**Feed:** The movement of a cutting tool into a workpiece.

**Fixture:** A device that securely holds the workpiece in place during cutting operation as opposed to a jig which is used to hold and guide a workpiece through an operation.

**Gib:** A tapered wedge located along a sliding member to take up wear or to ensure a proper fit.

**Headstock:** The major lathe component that houses the spindle and motor drive system to turn the workpiece.

**Lathe Center:** A lathe accessory with a 60° point which is inserted into the headstock or tailstock of the lathe and is used to support the workpiece.

**Leadscrew:** Lathe—The long screw that is driven by the change gears and supplies power to the carriage.

**Saddle:** The upper portion of carriage that rides on the lathe ways and supports the cross feed and the follow rest.

**Spindle:** The revolving shaft that holds and drives the workpiece or cutting tool.

**Tailstock:** A moveable fixture opposite of the headstock on a lathe that has a spindle used to support one end of a workpiece and for holding tools.

**Tool Post:** The part of the compound rest that holds the tool holder.

**Turret:** Lathe—A machine fixture that holds multiple tools and can be revolved and indexed to position.

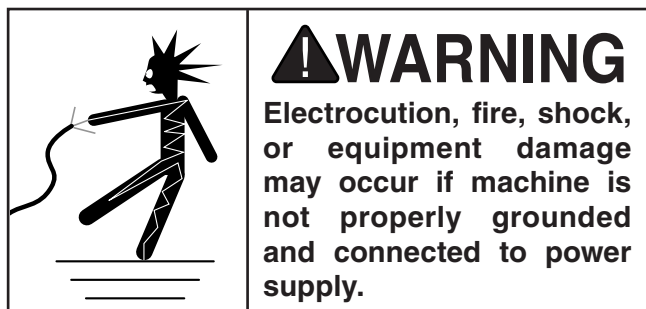
**Ways:** The precision machined and flat tracks on a lathe on which the carriage and tailstock slide.



# SECTION 2: POWER SUPPLY

## Availability

Before installing the machine, consider the availability and proximity of the required power supply circuit. If an existing circuit does not meet the requirements for this machine, a new circuit must be installed. To minimize the risk of electrocution, fire, or equipment damage, installation work and electrical wiring must be done by an electrician or qualified service personnel in accordance with all applicable codes and standards.



## Full-Load Current Rating

The full-load current rating is the amperage a machine draws at 100% of the rated output power. On machines with multiple motors, this is the amperage drawn by the largest motor or sum of all motors and electrical devices that might operate at one time during normal operations.

**G0602 Full-Load Rating.....13.6A**

**G0752 Full-Load Rating.....12A**

The full-load current is not the maximum amount of amps that the machine will draw. If the machine is overloaded, it will draw additional amps beyond the full-load rating.

If the machine is overloaded for a sufficient length of time, damage, overheating, or fire may result—especially if connected to an undersized circuit. To reduce the risk of these hazards, avoid overloading the machine during operation and make sure it is connected to a power supply circuit that meets the specified circuit requirements.

## **! WARNING**

**Serious injury could occur if you connect machine to power before completing setup process. DO NOT connect to power until instructed later in this manual.**

## 110V Circuit Requirements

This machine is prewired to operate on a power supply circuit that has a verified ground and meets the following requirements:

Nominal Voltage ..... 110V/120V  
Cycle ..... 60 Hz  
Phase ..... Single-Phase  
Minimum Circuit Size (G0602) ..... 20 Amps  
Minimum Circuit Size (G0752) ..... 15 Amps

A power supply circuit includes all electrical equipment between the breaker box or fuse panel in the building and the machine. The power supply circuit used for this machine must be sized to safely handle the full-load current drawn from the machine for an extended period of time. (If this machine is connected to a circuit protected by fuses, use a time delay fuse marked D.)

## **! CAUTION**

**For your own safety and protection of property, consult an electrician if you are unsure about wiring practices or electrical codes in your area.**

**Note:** *Circuit requirements in this manual apply to a dedicated circuit—where only one machine will be running on the circuit at a time. If machine will be connected to a shared circuit where multiple machines may be running at the same time, consult an electrician or qualified service personnel to ensure circuit is properly sized for safe operation.*

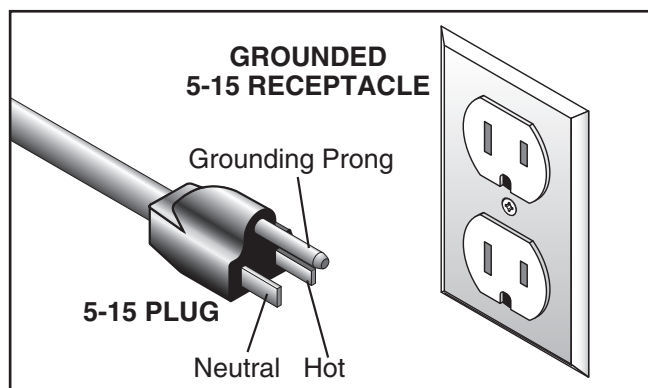




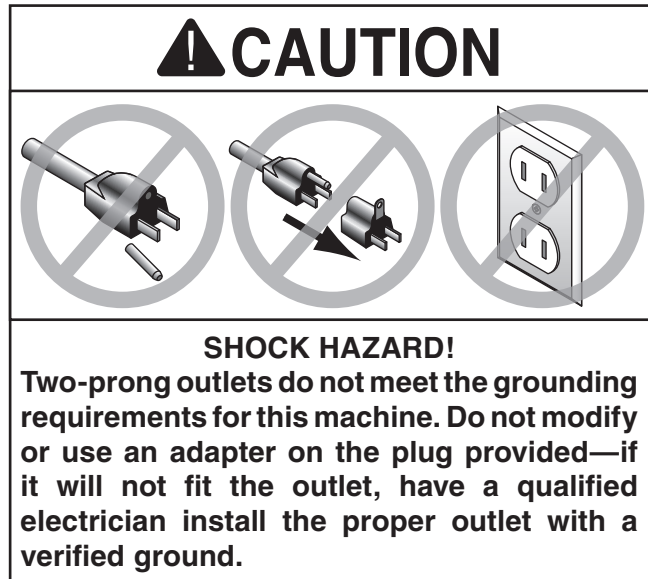
## Grounding & Plug Requirements

This machine **MUST** be grounded. In the event of certain malfunctions or breakdowns, grounding reduces the risk of electric shock by providing a path of least resistance for electric current.

This machine is equipped with a power cord that has an equipment-grounding wire and a grounding plug. Only insert plug into a matching receptacle (outlet) that is properly installed and grounded in accordance with all local codes and ordinances. **DO NOT** modify the provided plug!



**Figure 9.** Included 5-15 plug and receptacle.



Improper connection of the equipment-grounding wire can result in a risk of electric shock. The wire with green insulation (with or without yellow stripes) is the equipment-grounding wire. If repair or replacement of the power cord or plug is necessary, do not connect the equipment-grounding wire to a live (current carrying) terminal.

Check with a qualified electrician or service personnel if you do not understand these grounding requirements, or if you are in doubt about whether the tool is properly grounded. If you ever notice that a cord or plug is damaged or worn, disconnect it from power, and immediately replace it with a new one.

## Extension Cords

We do not recommend using an extension cord with this machine. If you must use an extension cord, only use it if absolutely necessary and only on a temporary basis.

Extension cords cause voltage drop, which can damage electrical components and shorten motor life. Voltage drop increases as the extension cord size gets longer and the gauge size gets smaller (higher gauge numbers indicate smaller sizes).

Any extension cord used with this machine must be in good condition and contain a ground wire and matching plug/receptacle. Additionally, it must meet the following size requirements:

**Minimum Gauge Size ..... 14 AWG**  
**Maximum Length (Shorter is Better).....50 ft.**



# SECTION 3: SETUP

## Unpacking

This machine was carefully packaged for safe transport. When unpacking, separate all enclosed items from packaging materials and inspect them for shipping damage. ***If items are damaged, please call us immediately at (570) 546-9663.***

**IMPORTANT:** Save all packaging materials until you are completely satisfied with the machine and have resolved any issues between Grizzly or the shipping agent. *You MUST have the original packaging to file a freight claim. It is also extremely helpful if you need to return your machine later.*



**!WARNING**  
**SUFFOCATION HAZARD!**  
Keep children and pets away from plastic bags or packing materials shipped with this machine. Discard immediately.

## Needed for Setup

The following are needed to complete the setup process, but are not included with your machine.

Description	Qty
• Additional People .....	1
• Safety Glasses .....	1 For Each Person
• Cleaner/Degreaser ( <b>Page 18</b> ) ....	As Needed
• Quality Metal Protectant.....	As Needed
• Disposable Shop Rags.....	As Needed
• Precision Level .....	1
• Lifting Straps (rated for at least 500 lbs.) ...	2
• Forklift/Power Lifting Device (rated for at least 500 lbs.).....	1
• Bench Mounting Hardware.....	As Needed





# Inventory

The following is a list of items shipped with your machine. Before beginning setup, lay these items out and inventory them.

If any non-proprietary parts are missing (e.g. a nut or a washer), we will gladly replace them; or for the sake of expediency, replacements can be obtained at your local hardware store.

Installed Components (Figure 10)	Qty.
A. 5" Three-Jaw Chuck.....	1
B. Steady Rest.....	1
C. Follow Rest.....	1
D. 4-Way Tool Post .....	1
E. Compound Rest .....	1
F. Tailstock.....	1

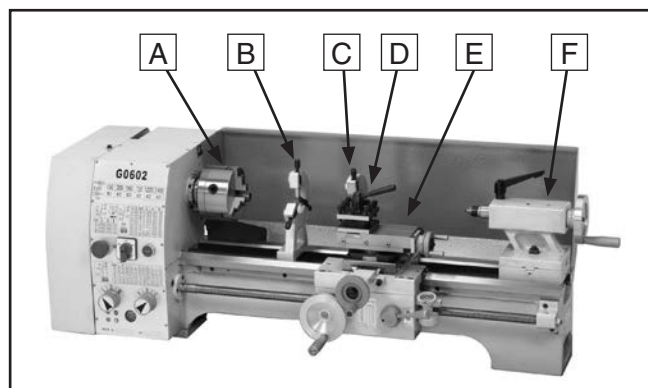


Figure 10. Installed components.

Packaged Components (Figure 11)	Qty.
G. Chip Pan (Not Shown).....	1
H. Hex Wrench Set (2.5, 3, 4, 5, 6 mm).....	1 Ea
I. Toolbox .....	1
J. 8" Faceplate .....	1
K. 6½" 4-Jaw Independent Chuck .....	1
L. Low Range Belt 27½" (G0602) .....	1
High Range Belt 33" (Installed, G0602) .....	1
V-Belt 33" (Installed, G0752) .....	1
M. #2 Phillips and Standard Screwdriver ...	1 Ea
N. Wrench Set (8/10, 12/14, 19/17mm).....	1 Ea
O. 3-Jaw Chuck Internal Jaw Set.....	1
P. 3-Jaw Chuck Key .....	1
Q. 4-Jaw Chuck Key .....	1
R. Oil Bottle for Oil.....	1
S. Cross Slide Handwheel Handle .....	1
T. Carriage Handwheel Handle .....	1
U. Dead Centers MT#3 .....	2

V. Dead Center MT#4 .....	1
W. Change Gear Set .....	1
— Change Gear (27-tooth, Installed) .....	1
— Change Gear (36-tooth).....	1
— Change Gear (40-tooth).....	1
— Change Gear (44-tooth).....	1
— Change Gear (45-tooth).....	1
— Change Gear (46-tooth).....	1
— Change Gear (48-tooth).....	1
— Change Gear (52-tooth).....	1
— Change Gear (56-tooth, Installed) .....	1
— Change Gear (60-tooth).....	1
— Plastic Drive Gear (60-tooth, Installed)..	1
— Change Gear (104-tooth, Installed) .....	1
— Change Gear (120-tooth) .....	1
— Change Gear (127-tooth, Installed).....	1
X. Frequency Drive Manual VFD-E (G0752, Not Shown) .....	1

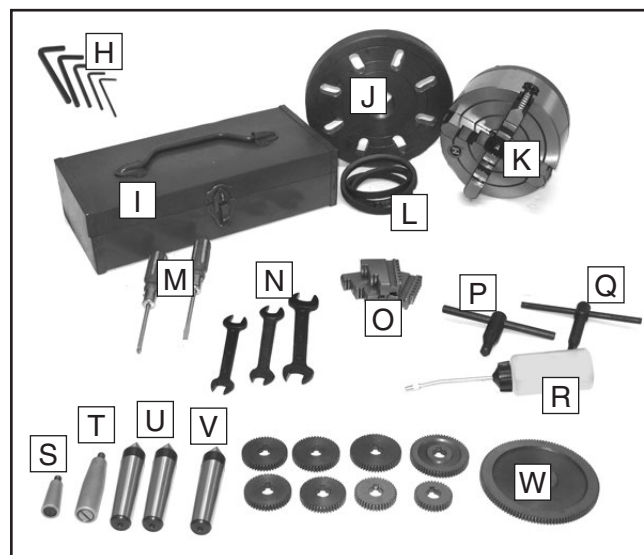


Figure 11. Packaged components.

## NOTICE

If you cannot find an item on this list, carefully check around/inside the machine and packaging materials. Often, these items get lost in packaging materials while unpacking or they are pre-installed at the factory.



# Cleanup

The unpainted surfaces of your machine are coated with a heavy-duty rust preventative that prevents corrosion during shipment and storage. This rust preventative works extremely well, but it will take a little time to clean.

Be patient and do a thorough job cleaning your machine. The time you spend doing this now will give you a better appreciation for the proper care of your machine's unpainted surfaces.

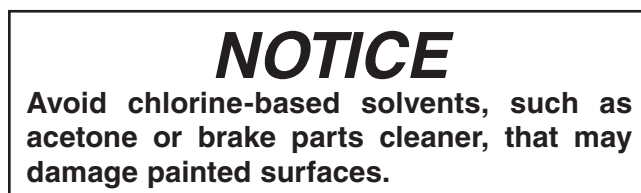
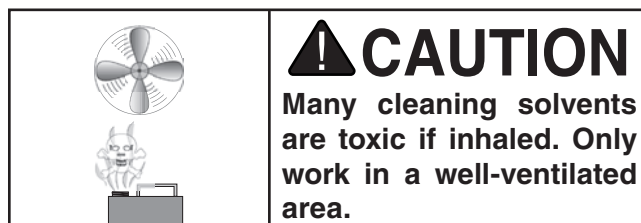
There are many ways to remove this rust preventative, but the following steps work well in a wide variety of situations. Always follow the manufacturer's instructions with any cleaning product you use and make sure you work in a well-ventilated area to minimize exposure to toxic fumes.

## Before cleaning, gather the following:

- Disposable rags
- Cleaner/degreaser (WD-40 works well)
- Safety glasses & disposable gloves
- Plastic paint scraper (optional)

## Basic steps for removing rust preventative:

1. Put on safety glasses.
2. Coat the rust preventative with a liberal amount of cleaner/degreaser, then let it soak for 5–10 minutes.
3. Wipe off the surfaces. If your cleaner/degreaser is effective, the rust preventative will wipe off easily. If you have a plastic paint scraper, scrape off as much as you can first, then wipe off the rest with the rag.
4. Repeat **Steps 2–3** as necessary until clean, then coat all unpainted surfaces with a quality metal protectant to prevent rust.



## T23692—Orange Power Degreaser

A great product for removing the waxy shipping grease from your machine during clean up.



**Figure 12.** T23692 Orange Power Degreaser.



## Site Considerations

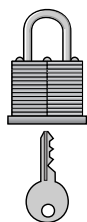
## Weight Load

Refer to the **Machine Data Sheet** for the weight of your machine. Make sure that the surface upon which the machine is placed will bear the weight of the machine, additional equipment that may be installed on the machine, and the heaviest workpiece that will be used. Additionally, consider the weight of the operator and any dynamic loading that may occur when operating the machine.

## Space Allocation

Consider the largest size of workpiece that will be processed through this machine and provide enough space around the machine for adequate operator material handling or the installation of auxiliary equipment. With permanent installations, leave enough space around the machine to open or remove doors/covers as required by the maintenance and service described in this manual.

**See below for required space allocation.**



**⚠ CAUTION**

**Children or untrained people may be seriously injured by this machine. Only install in an access restricted location.**

## Physical Environment

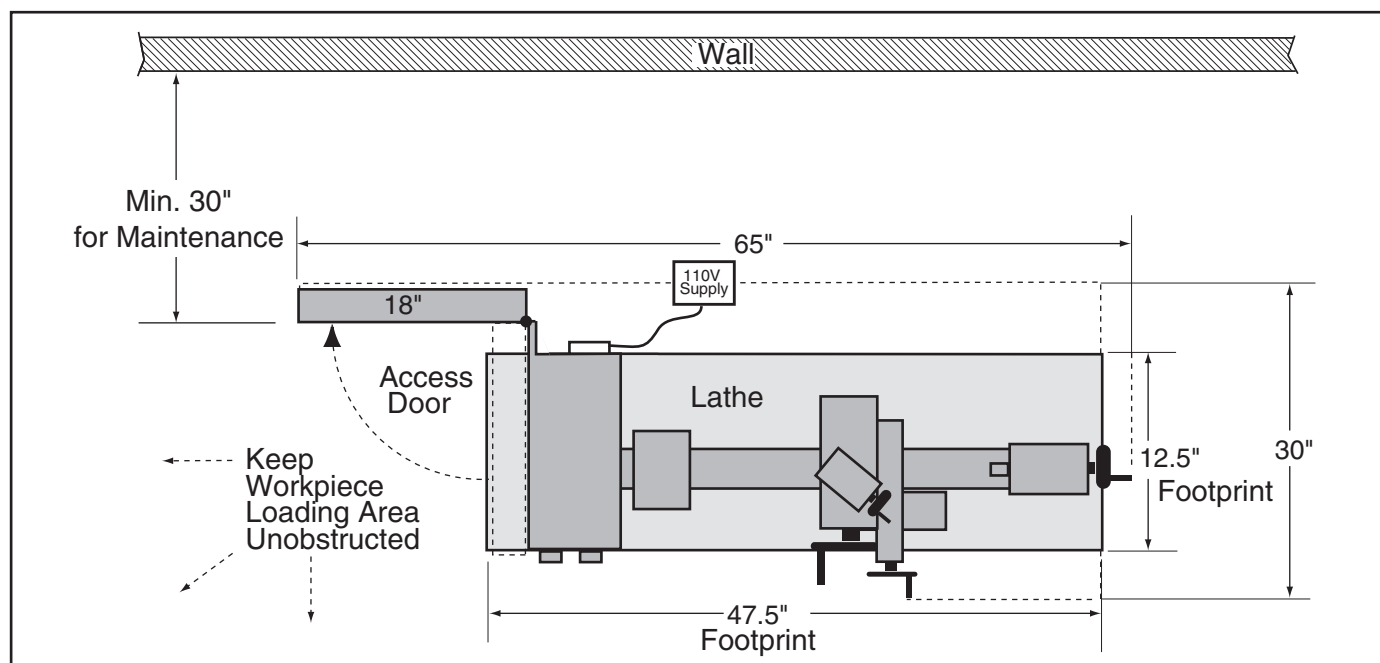
The physical environment where the machine operated is important for safe operation and longevity of machine components. For best results, operate this machine in a dry environment that is free from excessive moisture, hazardous chemicals, airborne abrasives, or extreme conditions. Extreme conditions for this type of machinery are generally those where the ambient temperature range exceeds 41°–104°F; the relative humidity range exceeds 20%–95% (non-condensing); the environment is subject to vibration, shock, or bumps.

## Electrical Installation

Place this machine near an existing power source. Make sure all power cords are protected from traffic, material handling, moisture, chemicals, other hazards. Make sure to leave enough space around machine to disconnect power supply. Apply a lockout/tagout device, if required.

## Lighting

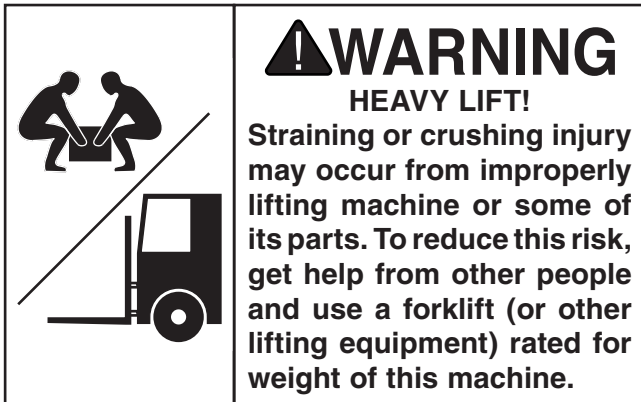
Lighting around the machine must be adequate enough that operations can be performed safely. Shadows, glare, or strobe effects that may distract or impede the operator must be eliminated.



**Figure 13. Minimum working clearances.**



# Lifting & Placing



Do not attempt to lift or move this lathe without using the proper lifting equipment (such as forklift or crane) or the necessary assistance from other people. Refer to **Needed for Setup** on **Page 16** for details.

## To lift and move the lathe:

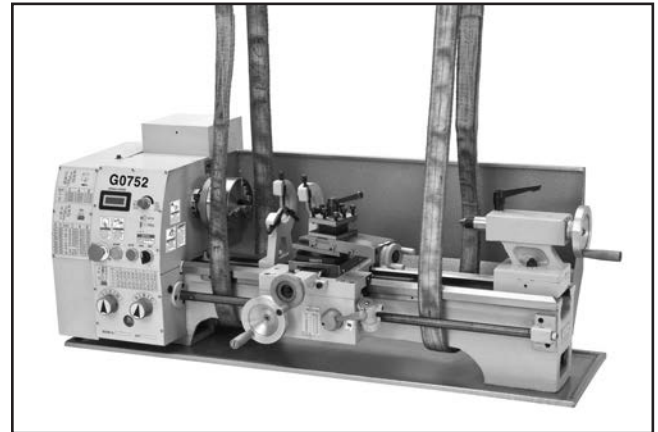
1. Remove the shipping crate top and sides, then remove the chip pan, 4-jaw chuck, faceplate, and toolbox from the shipping pallet.
2. Position the chip pan on the selected mounting surface and use it as a template to mark the hole locations for the mounting hardware (refer to **Leveling & Mounting** on **Page 21**).
3. Unbolt the lathe from the shipping pallet.



4. To balance the load for lifting, move the tailstock and carriage to the extreme right end of the bedway, then lock them in place.

**Note:** Before attempting to move the carriage, make sure the carriage lock is loose and the half nut is disengaged.

5. Wrap the lifting straps around the bed and between the leadscrew and the bedway, as shown in **Figure 14**, to help prevent bending the leadscrew during lifting.



**Figure 14.** Example of lifting strap positions.

6. Attach the lifting straps to the power lifting equipment, have an assistant steady the load, then lift it just enough to clear any obstacles and move it to its mounting position.
7. Properly mount the lathe as instructed in the **Mounting** subsection on **Page 21**.



# Leveling & Mounting

## NOTICE

For accurate turning results and to prevent warping the cast iron bed and ways, the lathe bedways **MUST** be leveled from side-to-side and from front-to-back on both ends.

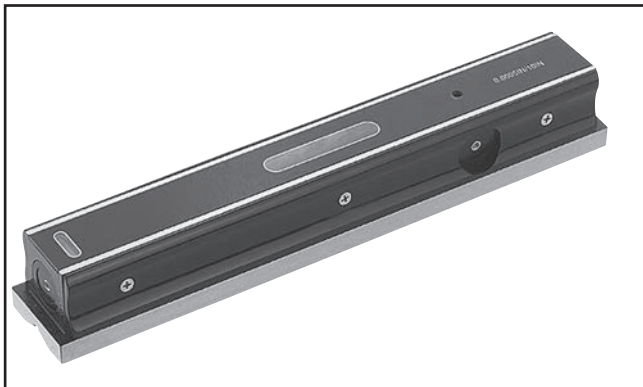
Re-check the bedways 24 hours after installation, two weeks after that, and then annually to make sure they remain level.

## Leveling

Leveling machinery helps precision components, such as bedways, remain straight and flat during the lifespan of the machine. Components on a machine that is not level may slowly twist due to the dynamic loads placed on the machine during operation.

For best results, use a precision level that is at least 12" long and sensitive enough to show a distinct movement when a 0.003" shim (approximately the thickness of one sheet of standard newspaper) is placed under one end of the level.

See the figure below for an example of a high precision level.



**Figure 15.** Grizzly Model H2683 12" Master Machinist's Level.

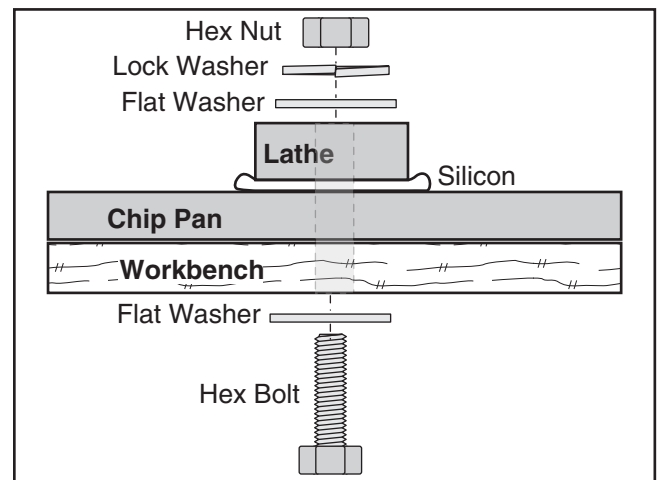
## Mounting

The chip pan and the base of the lathe have holes that allow the machine to be mounted to a workbench. You **MUST** mount your machine to a workbench to prevent it from unexpectedly moving during operation, which could lead to personal injury or property damage.

**Follow these guidelines when mounting your lathe to ensure safe and accurate cutting results:**

- Make sure that the workbench can adequately support the weight of the machine and materials and that it will not move or vibrate during operation.
- Use a silicon sealant between the lathe and the chip pan to prevent coolant or other fluids from leaking through onto the bench or floor.

To mount the lathe and chip pan to the workbench, drill holes all the way through the workbench, and use hex bolts, washers, and hex nuts to secure the lathe to the workbench, as illustrated in **Figure 16**.



**Figure 16.** Example of a through mount setup.

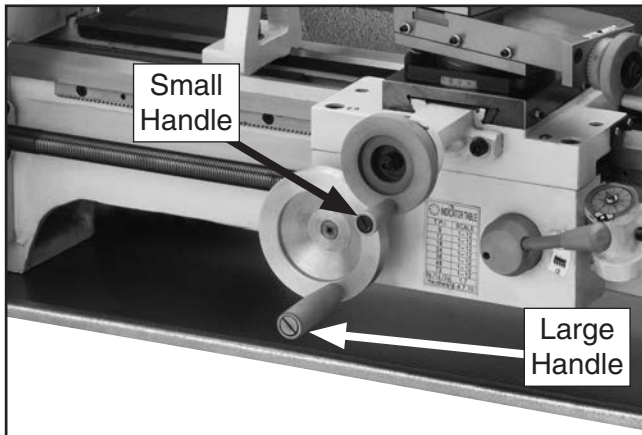




# Assembly

With the exception of the handwheel handles, the lathe is shipped fully assembled.

To install the handwheel handles, thread the large handle into the carriage handwheel and the small handle into the cross slide handwheel, as shown in **Figure 17**.



**Figure 17.** Handwheel handles installed.

# Lubricating Lathe



The lathe must be properly lubricated before it can be operated for the first time.

Damage caused to the bearings and gears from running the lathe without oil in the reservoirs will not be covered under warranty. Refer to the **Lubrication** section, beginning on **Page 52**, for details on how to lubricate the lathe.

# Power Connection

Before the machine can be connected to the power source, an electrical circuit and connection device must be prepared per the **POWER SUPPLY** section in this manual, and all previous setup instructions in this manual must be completed to ensure that the machine has been assembled and installed properly.

## Connecting Power

Always make sure the spindle direction switch on the front of the headstock is turned OFF (middle position) before connecting power.

Insert the power cord plug into a matching power supply receptacle.

## Disconnecting Power

If you need to disconnect the machine from power for maintenance, service, or adjustments, turn the machine off and pull the plug completely out of the receptacle.

# Test Run

Once the assembly is complete, test run your machine to make sure it runs properly and is ready for regular operation.

The test run consist of verifying the following: 1) The motor powers up and runs correctly, 2) the emergency STOP button safety feature works correctly.

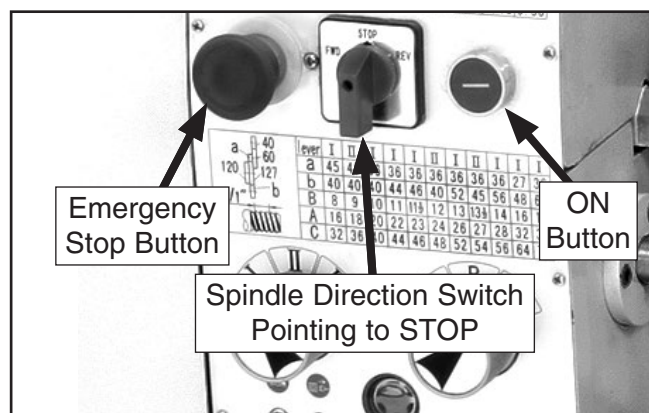
If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review **Troubleshooting** on **Page 57**.

If you still cannot remedy a problem, contact our Tech Support at (570) 546-9663 for assistance.



## To test run your machine:

1. Make sure the spindle direction switch (see **Figure 18**) is turned to STOP, and press the emergency STOP button.

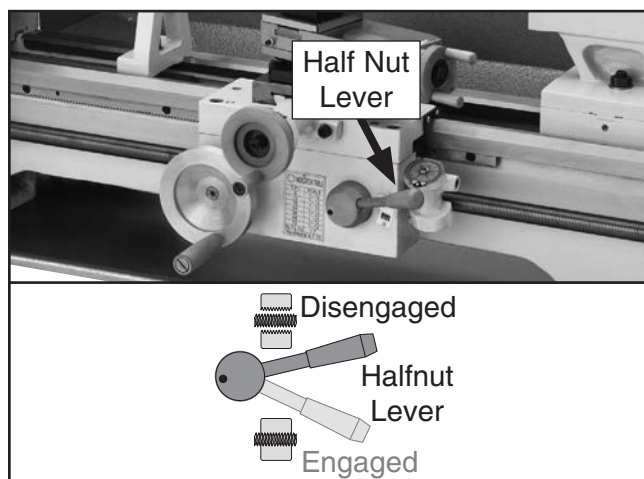


**Figure 18.** Headstock and gearbox controls.

2. Read and follow the safety instructions at the beginning of the manual, take all required safety precautions, and make sure all previous preparation steps discussed in this manual have been followed and completed.
3. Clear away all tools and objects used during assembly, lubrication, and preparation.
4. Make sure chuck and jaws, if installed, are secure (see **Chuck Installation** on **Page 27**).

**Note:** If a chuck is not installed on the lathe, you do not need to install one for this test.

5. Set lathe spindle speed for 150 RPM, (refer to **Setting Spindle Speed** on **Page 42**).
6. Disengage the half nut with the lever shown in **Figure 19**.



**Figure 19.** Half nut lever in the disengaged position.

7. Reset the emergency STOP button by twisting it clockwise until it pops out.
8. **G0752 Only:** Ensure the spindle speed dial is turned all the way counterclockwise.

Push the green ON button, then turn the spindle direction switch to FWD. Turn the spindle speed dial until the spindle speed display shows 150 RPM. The spindle should be rotating counterclockwise—down and toward you as you face the lathe.

**G0602:** Push the green ON button, then turn the spindle direction switch to FWD. The spindle should be rotating counterclockwise—down and toward you as you face the lathe.

9. Push the emergency STOP button to turn the lathe **OFF**, then, without resetting the STOP button, try to restart spindle rotation. The spindle should *not* start.

—If spindle rotation *does* start with the emergency STOP button pressed in, the button is not operating correctly. This safety feature must operate properly before continuing operation. Use the spindle direction switch to stop the lathe, disconnect it from power, and call Tech Support for help.

Congratulations! The test run is complete. Turn the lathe **OFF** and perform the following **Spindle Break-In** procedure.





# Spindle Break-In

---

Before subjecting the lathe to full loads, it is essential to complete the spindle break-in process. This will ensure the best results and maximum life of the precision components inside the lathe.

The break-in procedure must be performed in succession with the **Test Run** procedure because many of the test run steps prepare the lathe controls for the break-in process.

**Important:** *Do not perform the break-in procedure independently from the **Test Run** section—serious damage could occur to the lathe if the controls are set differently than instructed in that section.*

## To perform the spindle break-in:

1. Operate the lathe at 150 RPM for 10 minutes.
2. **G0602:** Repeat **Step 1** at each of the following speeds 300, 560, 720, 1200, and 2400.

**G0752:** Repeat **Step 1** at each of the following approximate speeds: 800, 1300, and 2000.

3. When the spindle has come to a complete stop, run the spindle in reverse at 2400 RPM (Model G0602) or 2000 RPM (Model G0752) for another 10 minutes, then press the emergency STOP button and DISCONNECT THE LATHE FROM POWER!
4. Check, and if necessary, re-tension the drive belts (refer to **V-Belt Tension & Replacement Page 64** on page for detailed instructions.)
5. While the oil is still warm and any metal particles are still suspended in the oil, change the gearbox oil (refer to **Lubrication on Page 52** for detailed instructions).

Congratulations! The spindle break-in is complete. Continue with the following **Recommended Adjustments** subsection.

# Recommended Adjustments

---

For your convenience, the adjustments listed below have been performed at the factory. However, because of the many variables involved with shipping, we recommend that you at least verify the following adjustments to ensure the best possible results from your new machine. Step-by-step instructions for these adjustments can be found on the pages referenced below.

## Factory adjustments that should be verified:

- Tailstock alignment (**Page 33**)
- Gib adjustments (**Page 61**)
- Backlash adjustment (**Page 60**)

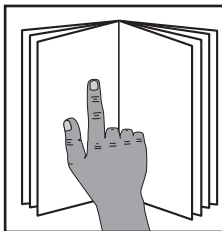


# SECTION 4: OPERATIONS

## Operation Overview

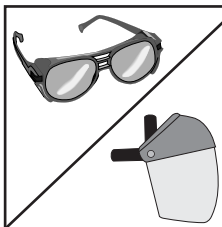
The purpose of this overview is to provide the novice machine operator with a basic understanding of how the machine is used during operation, so the machine controls/components discussed later in this manual are easier to understand.

Due to the generic nature of this overview, it is **not** intended to be an instructional guide. To learn more about specific operations, read this entire manual, seek additional training from experienced machine operators, and do additional research outside of this manual by reading "how-to" books, trade magazines, or websites.



### **!WARNING**

To reduce your risk of serious injury, read this entire manual **BEFORE** using machine.



### **!WARNING**

To reduce risk of eye injury from flying chips always wear safety glasses or face shield when operating.

### **NOTICE**

If you are not experienced with this type of machine, **WE STRONGLY RECOMMEND** that you seek additional training outside of this manual. Read books/magazines or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

### **NOTICE**

Complete the Test Run & Break-In procedure on Pages 22– 24 before using this lathe for any cutting or threading operations; otherwise, gear box damage will occur.

To complete a typical operation, the operator does the following:

1. Puts on safety glasses, rolls up sleeves, removes jewelry, and secures any clothing, jewelry, or hair that could get entangled in moving parts.
2. Examines the workpiece to make sure it is suitable for turning, then securely mounts the workpiece in a chuck, between centers, or on the faceplate.
3. Mounts the tooling, aligns it with the workpiece, then backs it away to establish a safe startup clearance.
4. Clears all setup tools from the lathe.
5. Checks for safe clearances by rotating the workpiece by hand at least one full revolution.
6. Sets the correct spindle speed for the operation.
7. If using power feed, selects the proper feed rate for the operation.
8. Starts spindle rotation, then engages the half nut.
9. Uses various carriage controls to move the tooling into the workpiece for operations.
10. When finished cutting, disengages the half nut (power feed only), moves the spindle direction switch to the OFF position, waits for the spindle to completely stop, then removes the workpiece.

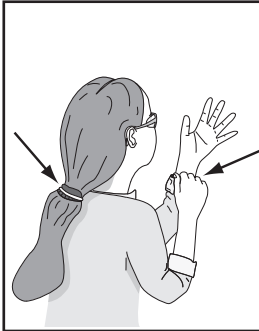


# Chuck & Faceplate Mounting

This lathe is equipped with a threaded spindle nose. With this type of spindle, a chuck or faceplate is screwed directly onto the spindle nose.

## !WARNING

Never use spindle speeds faster than the chuck RPM rating or the safe limits of your workpiece. Excessive spindle speeds greatly increase the risk of the workpiece or chuck being thrown from the machine with deadly force!



## !WARNING

Loose hair, clothing, or jewelry could get caught in machinery and cause serious personal injury. Keep these items away from moving parts at all times to reduce this risk.

This lathe ships with the 3-jaw chuck installed. This is a scroll-type chuck where all three jaws move in unison when the chuck key is used.

The included 4-jaw chuck features independent jaws, which are used for square or unevenly-shaped stock, and to mount work that needs to be adjusted to near zero total indicated runout.

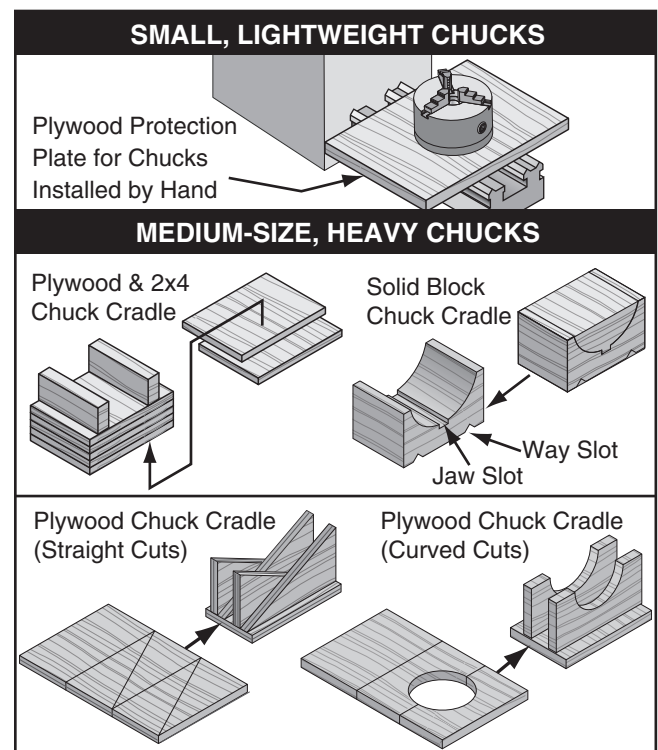
If neither chuck can hold your workpiece, the cast iron faceplate has slots for T-bolts that hold standard or custom clamping hardware. With the correct clamping hardware, a faceplate offers a wide range of uses, including machining non-concentric workpieces, straight turning between centers, off-center turning, and boring.

# Installation & Removal Devices

Because chucks are heavy and often awkward to hold, some kind of support or protective device should be used during installation or removal. The weight and size of the chuck will determine the appropriate device to use (refer to the following figure for examples).

## !WARNING

A dropped chuck can cause amputation, serious crushing injuries, or property damage. Always use a support or protective device to reduce this risk when installing or removing a chuck.



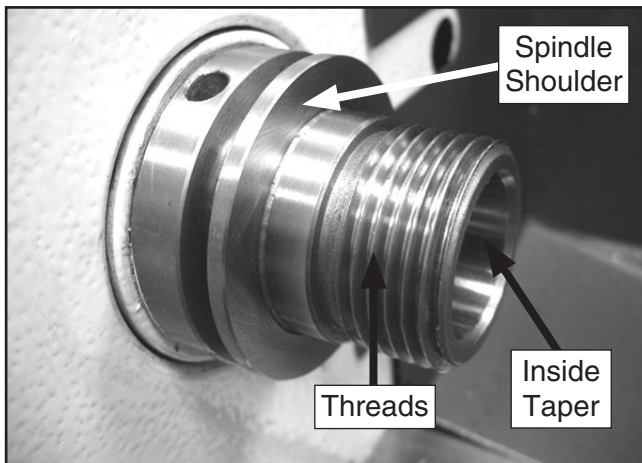
**Figure 20.** Examples of common devices used during chuck installation and removal.



# Chuck Installation

To ensure accurate work, it is extremely important to make sure the spindle nose and chuck mating surfaces are clean. Even a small amount of lint or debris can affect accuracy.

The chuck is properly installed when it threads all the way onto the spindle nose (see **Figure 21** below) and is seated against the spindle shoulder.



**Figure 21.** Spindle nose.

Tools Needed:	Qty
Chuck Wrenches .....	2
Hex Wrench 5mm.....	1

## To install the chuck:

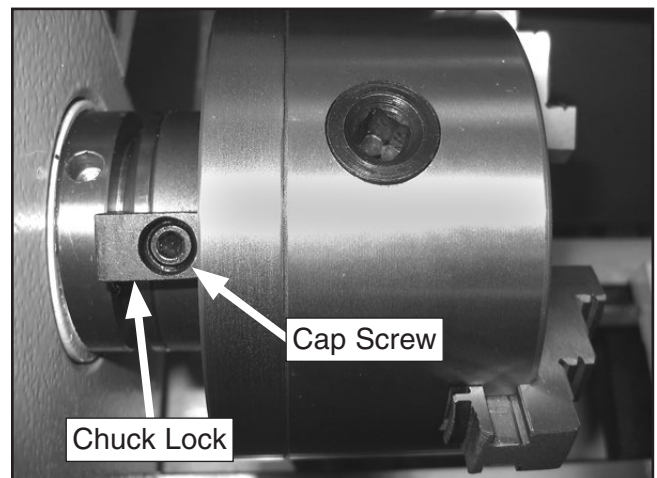
1. DISCONNECT LATHE FROM POWER!
2. Use an appropriate device to protect the ways and support the chuck during the installation process (refer to **Installation & Removal Devices** on **Page 26**).
3. Thoroughly clean, inspect, deburr, and lightly oil all threads and mating surfaces.
4. Thread the chuck onto the spindle nose and hand-tighten it.

5. Insert the chuck wrenches as shown in **Figure 22**, and tighten the chuck until it is seated snug against the spindle shoulder.



**Figure 22.** Location to insert chuck keys when installing chuck.

6. Install the chuck locks with the cap screws (see **Figure 23**).



**Figure 23.** Chuck lock installed on spindle nose and chuck.



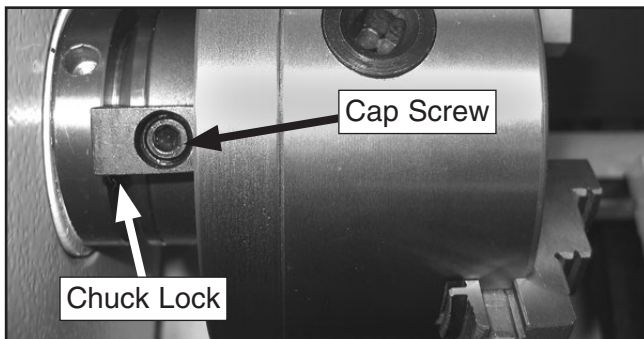


# Chuck Removal

Tools Needed:	Qty
Chuck Wrenches .....	2
Hex Wrench 5mm.....	1

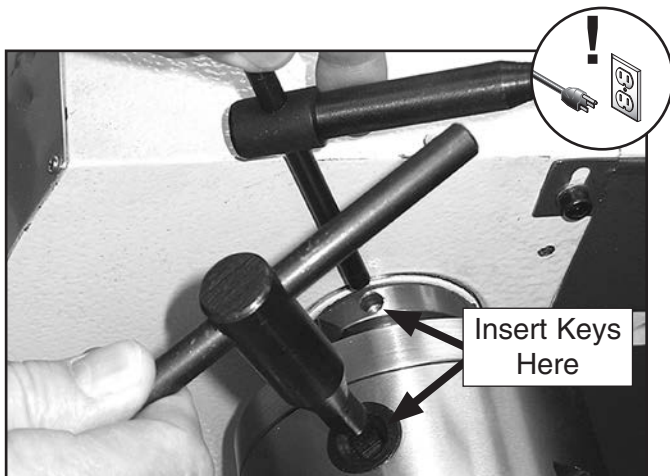
## To remove the chuck:

1. DISCONNECT LATHE FROM POWER!
2. Use an appropriate device to protect the ways and support the chuck (refer to **Installation & Removal Devices** on Page 26).
3. Remove the cap screws and chuck locks (see **Figure 24**).



**Figure 24.** Location of chuck lock and cap screws.

4. Insert the chuck wrenches, as shown in **Figure 25**, then while holding the spindle, unthread the chuck in a counterclockwise direction.



**Figure 25.** Location to insert chuck keys when removing chuck.

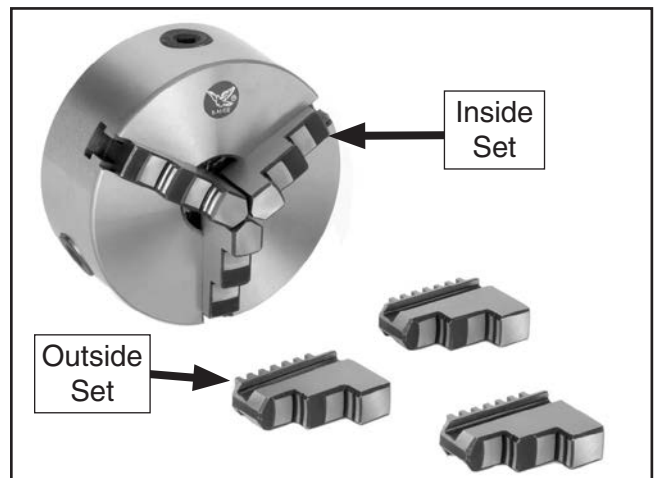
5. Support the chuck, unscrew it, and remove.

# Changing Jaw Set

Tools Needed:	Qty
Chuck Wrench .....	1

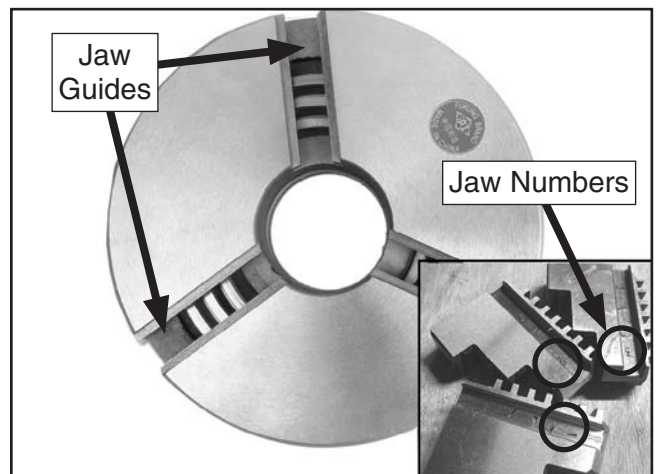
The 3-jaw scroll chuck included with the lathe features inside and outside hardened steel jaw sets (see **Figure 26**), which move in unison to center a concentric workpiece.

When installing the jaws, it is important to make sure they are installed correctly. Incorrect installation will result in jaws that do not converge evenly and are unable to securely clamp a workpiece.



**Figure 26.** Chuck and jaw selection.

Jaws are numbered from 1–3 (see **Figure 27**). They are designed to be installed in numerical order in the jaw guides so they will hold a concentric workpiece evenly.

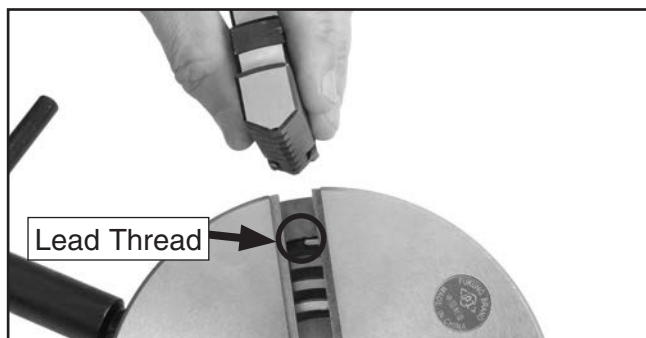


**Figure 27.** Jaw guide and jaw numbers.



## To change the jaw set:

1. DISCONNECT LATHE FROM POWER!
2. Place a piece of plywood over the bedways to protect them from potential damage.
3. Insert the chuck key and turn it counterclockwise to back the jaws out and remove them.
4. Use mineral spirits to clean the debris and grime from the jaws and chuck jaw guides.
5. Apply a thin coat of white lithium grease to the surfaces of the removed jaw set. Store in a safe place free from moisture and abrasives.
6. Rotate the chuck key clockwise until you see the tip of the scroll-gear lead thread just begin to enter a jaw guide (see **Figure 28**).



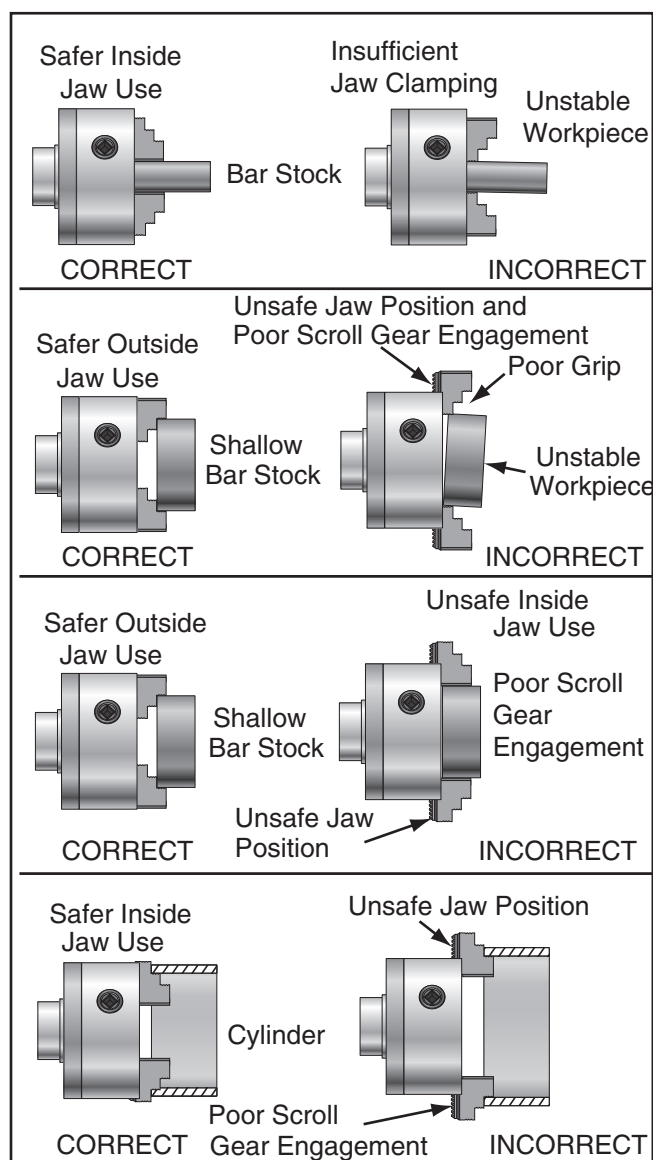
**Figure 28.** Lead thread on scroll gear.

7. Insert jaw #1 into the jaw guide and hold the jaw against the scroll-gear.
8. Rotate the chuck key clockwise one turn to engage the tip of the scroll-gear lead thread into the jaw. Pull the jaw; it should be locked into the jaw guide.
9. Install the remaining jaws in numerical order, in the same manner.
  - If installed correctly, the jaws will converge evenly at the center of the chuck.
  - If the jaws do not converge evenly, remove them. Re-install the jaws sequentially 1–3, and make sure each one engages with the scroll-gear lead thread during its first rotation.

# Scroll Chuck Clamping

The 3-jaw scroll-type chuck has an internal scroll-gear that moves all jaws in unison when adjusted with the chuck key. The chuck will hold cylindrical parts on-center with the axis of spindle rotation and can be rotated at high speeds if the workpiece is properly clamped and balanced.

**Never mix jaw types or positions to accommodate an odd-shaped workpiece.** The chuck will spin out of balance and may throw the workpiece! Instead, use an independent jaw chuck or a faceplate.



**Figure 29.** Jaw selection and workpiece holding.



# 4-Jaw Chuck

Refer to the **Chuck Installation** (see **Page 27**) and **Chuck Removal** (see **Page 28**) instructions to install or remove the 4-jaw chuck.

The 4-jaw chuck features independently adjustable hardened steel jaws for holding non-concentric or off-center workpieces. Each jaw can be independently removed from the chuck body and reversed for a wide range of work holding versatility.

## WARNING

Because of the dynamic forces involved in machining a non-concentric or off-center workpiece, always use a low spindle speed to reduce risk of the workpiece coming loose and being thrown from the lathe, which could cause death or serious personal injury.

### Tools Needed:

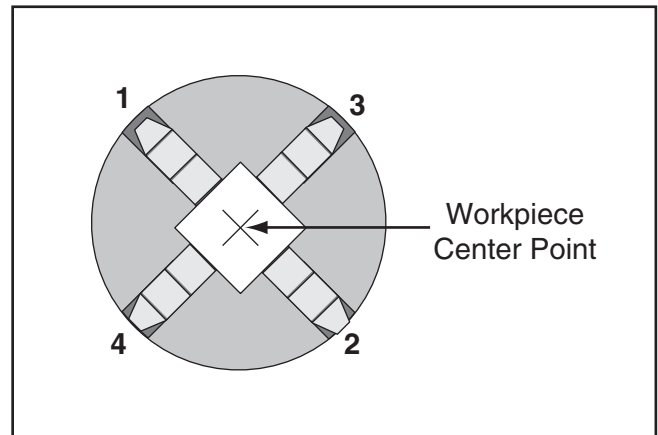
Qty

4-Jaw Chuck Key ..... 1  
Dial Indicator ..... 1

### To mount the workpiece:

1. DISCONNECT LATHE FROM POWER!
2. Place a chuck cradle or plywood on the bedway below the chuck to protect the bedway surfaces.
3. Use the chuck key to open each jaw so the workpiece will lay flat against the chuck face, jaw steps, or into the spindle opening.
4. With help from another person or a holding device, position the workpiece so it is centered in the chuck.

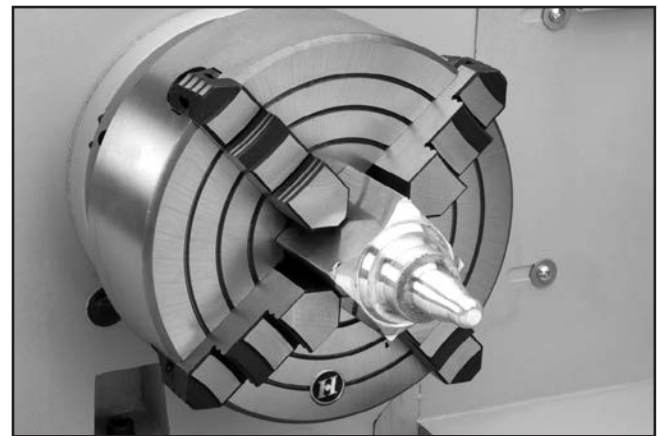
5. Tighten each jaw in small increments. After you have adjusted the first jaw, continue tightening the remaining jaws in an opposing sequence, as shown by the sequential order in **Figure 30**.



**Figure 30.** 4-jaw tightening sequence.

6. After the workpiece is held in place by the jaws, use a dial indicator to make sure the workpiece is centered in the chuck.

—If the workpiece is not correctly centered, make fine adjustments by slightly loosening one jaw and tightening the opposing jaw until the workpiece is correctly positioned (see **Figure 31** for an example).



**Figure 31.** Generic picture of non-cylindrical workpiece correctly mounted on the 4-jaw chuck.





# Faceplate

Refer to the **Chuck Installation** (see **Page 27**) and **Chuck Removal** (see **Page 28**) instructions to install or remove the faceplate.

The faceplate included with your lathe can be used for a wide range of operations, including machining non-concentric workpieces, straight turning between centers, off-center turning, and boring.

The tools needed for mounting a workpiece will vary depending on the type of setup you have.

## WARNING

Machining non-concentric workpieces at a high speed could cause the workpiece to be thrown from the spindle with deadly force at the operator or bystanders. To reduce this risk, only machine non-concentric workpieces at low speeds and clamp counter-weights to the faceplate to balance it.

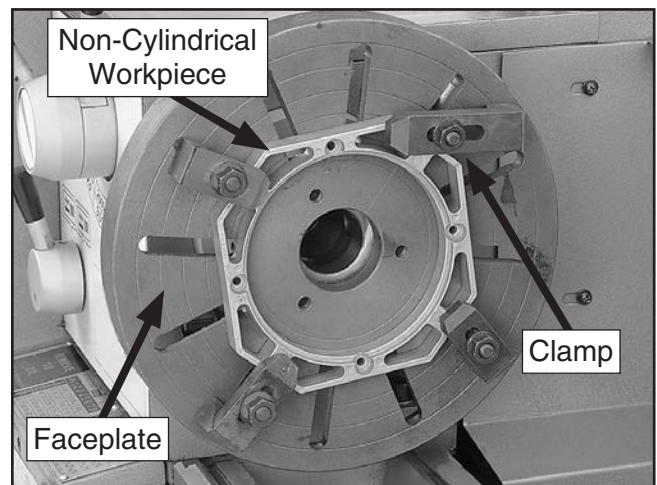
## WARNING

Failure to properly secure a workpiece to the faceplate could cause the workpiece to be thrown from the lathe with deadly force at the operator or bystanders. Use a minimum of **THREE** independent clamping devices to hold the workpiece onto the faceplate.

To mount a non-concentric workpiece to the faceplate:

1. DISCONNECT LATHE FROM POWER!
2. Protect the bedway with a piece of plywood.
3. With help from another person or a holding device to support the workpiece, position it onto the faceplate and clamp it in place with a minimum of three independent clamping devices (see **Figure 32** for an example).

Be sure to take into account the rotational and cutting forces that will be applied to the workpiece when clamping it to the faceplate. If necessary, use counter-weights to balance the assembly and use a dial indicator to make sure that the workpiece is properly positioned for your operation.

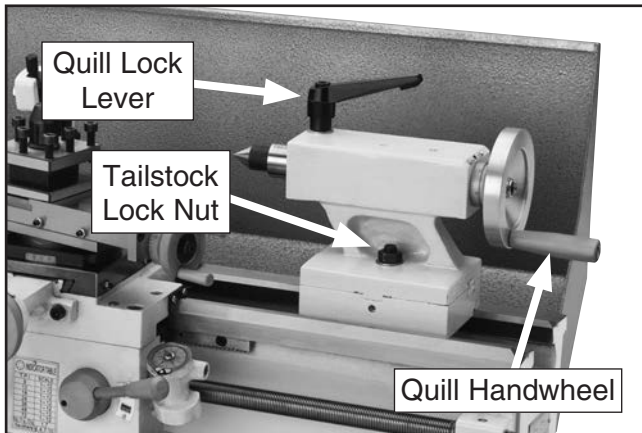


**Figure 32.** Generic picture of workpiece clamped in a faceplate.



# Tailstock

The tailstock (see **Figure 33**) is typically used to support long workpieces by means of a live or dead center (refer to **Centers** on **Page 36**). It can also be used to hold a drill or chuck to bore holes in the center of a part. Custom arbors and tapers can also be cut on your lathe by using the offset tailstock adjustment.



**Figure 33.** Tailstock and quill lock handles in locked position.

## Graduated Dial

Increments..... 0.001"  
One Full Revolution ..... 0.060"

## Increments on Quill

Inch ..... 0"-2½" in ⅛" Increments  
Metric..... 0–65mm in 1mm Increments

## Positioning Tailstock

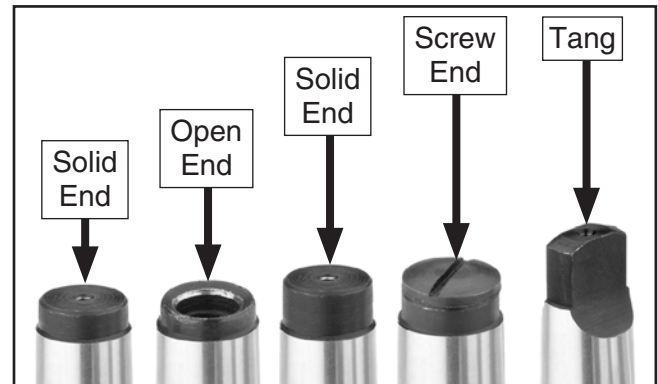
1. Loosen the tailstock lock nut to unlock the tailstock from the bedway.
2. Slide the tailstock to the desired position.
3. Tighten the tailstock lock nut to lock the tailstock against the bedway.

## Using Quill

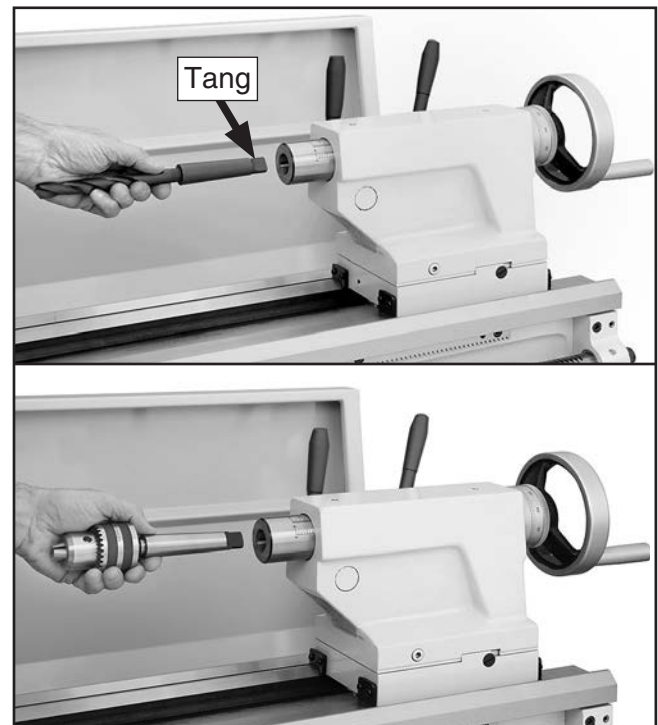
1. Loosen the quill lock lever.
2. Turn the quill handwheel clockwise to move the quill toward the spindle or counterclockwise to move it away from it.
3. Tighten the quill lock lever.

## Installing Tooling

This tailstock uses a quill with an MT#3 taper that accepts a variety of tapered arbors and tooling, including tang arbors and drill bits (see **Figures 34–35** for examples).



**Figure 34.** Types of tapered arbors and tooling.



**Figure 35.** Example photos of inserting MT#3 tools with tangs into a typical tailstock.

**Note:** If the tooling has an open hole in the end, then a screw can be threaded into the end of the tool to provide a solid surface for the quill pin to push against when the quill is retracted for tool removal. Otherwise, removal of such tooling may be difficult.



### To install tooling in the tailstock:

1. With the tailstock locked in place, unlock the quill, then use the handwheel to extend it approximately 1".
2. Thoroughly clean and dry the tapered mating surfaces of the quill and the center, making sure that no lint or oil remains on the tapers.
3. With a firm and quick motion, insert the tool into the quill, as shown in **Figure 35** on **Page 32**. Check to see if it is firmly seated by attempting to twist it—a firmly seated tool will not twist.
4. Unlock the tailstock and move it until the tip of the tool is close to, but not touching, the workpiece, then re-lock the tailstock.
5. Start spindle rotation, unlock the quill lock lever, then turn the quill handwheel clockwise to feed the tool into the workpiece.

### Removing Tooling

1. Use a shop rag to hold the tool.
2. Rotate the quill handwheel counterclockwise until the tool is forced out of the quill.

### Offsetting Tailstock

The tailstock can be offset from the spindle centerline for turning tapers. Move the tailstock top casting toward the front of the lathe to machine a taper at the tailstock end. Conversely, position the tailstock top casting toward the back of the lathe to machine a taper at the spindle end.

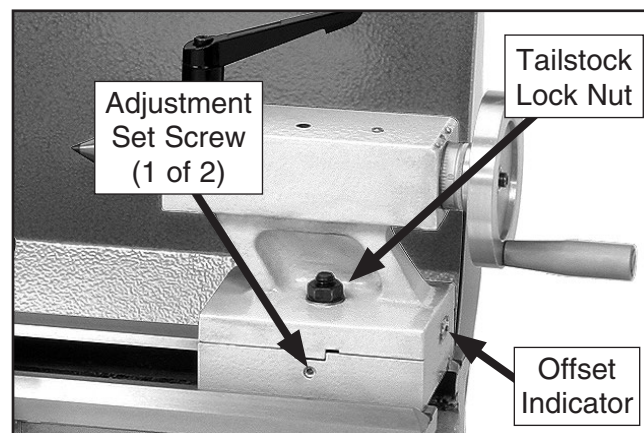
**Note:** *The marks on the offset indicator are arbitrary. For a precise offset, use a dial indicator to check quill movement while adjusting the screws.*

#### Tools Needed

	Qty
Hex Wrench 4mm.....	1
Open-End Wrench 19mm.....	1

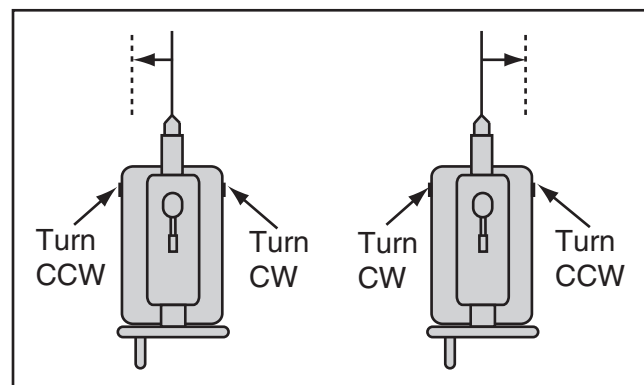
### To offset the tailstock:

1. Loosen the tailstock lock nut (see **Figure 36**).



**Figure 36.** Left offset adjustment.

2. Rotate the adjustment set screws in opposite directions for the desired offset (see the illustration in **Figure 37**).



**Figure 37.** Set screw adjustment in relation to tailstock movement.

3. Retighten the tailstock lock nut to secure the offset.



## Aligning Tailstock to Spindle Centerline

This is an essential adjustment that should be verified or performed each time the tailstock is used to turn concentric workpieces between centers or immediately after offsetting the tailstock when turning a taper. If the tailstock is not aligned with the spindle centerline when it is supposed to be, turning results will be inaccurate along the length of the workpiece.

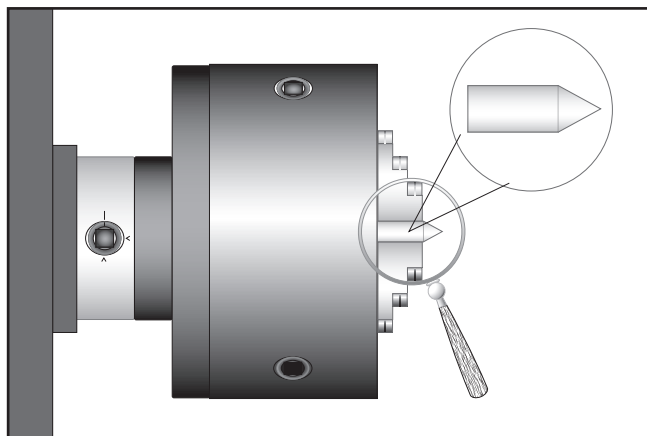
Items Needed	Qty
Hex Wrench 4mm.....	1
Open-End Wrench 19mm.....	1
Round Stock 2" x 6" .....	2
Precision Level .....	1
Precision Calipers .....	1
Dial Indicator .....	1

### To align the tailstock to the spindle centerline:

1. Use the precision level to make sure the bedway is level from side-to-side and from front-to-back.

—If the bedway is not level, correct this condition before continuing (refer to **Leveling & Mounting** on **Page 21**).

2. Center drill both ends of one piece of round stock, then set it aside for use in **Step 5**.
3. Use the other piece of round stock to make a dead center, and turn it to a 60° point, as illustrated in **Figure 38**.



**Figure 38.** Turning a dead center.

**Note:** As long as this dead center remains in the chuck, the point of the center will remain true to the spindle centerline. The point will have to be refinished whenever the center is removed and then returned to the chuck.

4. Install a center in the tailstock.
5. Attach a lathe dog to the test stock from **Step 2**, then mount it between the centers (see **Figure 39** for an example).



**Figure 39.** Example photo of stock mounted between the centers.

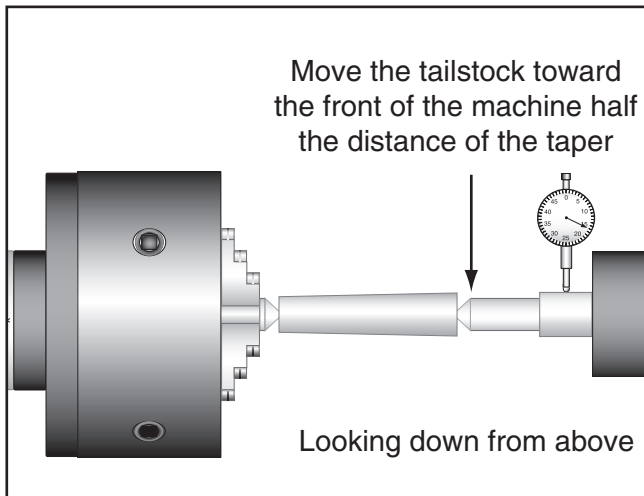
6. Turn 0.010" off the stock diameter.
7. Mount a test or dial indicator so that the plunger is on the tailstock quill.

**Note:** If necessary in the following step, refer to **Offsetting Tailstock** on **Page 33** for detailed instructions.



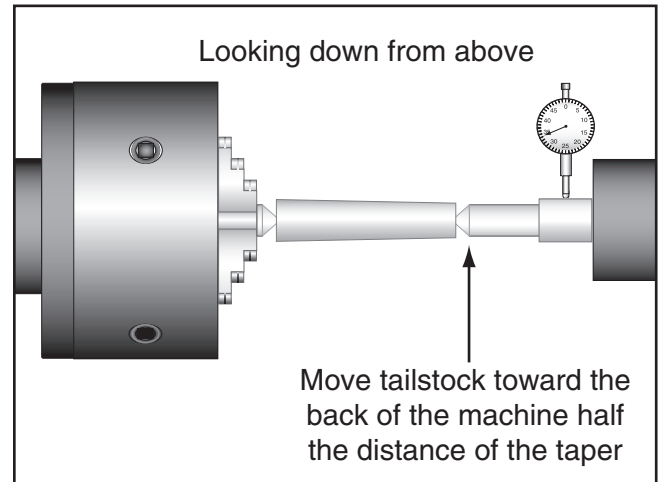
8. Use calipers to measure both ends of the workpiece.

—If the test stock is *thicker* at the tailstock end, move the tailstock toward the *front* of the lathe  $\frac{1}{2}$  the distance of the amount of taper (see **Figure 40**).



**Figure 40.** Adjust tailstock toward the operator.

—If the test stock is *thinner* at the tailstock end, move the tailstock toward the *back* of the lathe  $\frac{1}{2}$  the distance of the amount of taper (see **Figure 41**).



**Figure 41.** Adjust tailstock away from the operator.

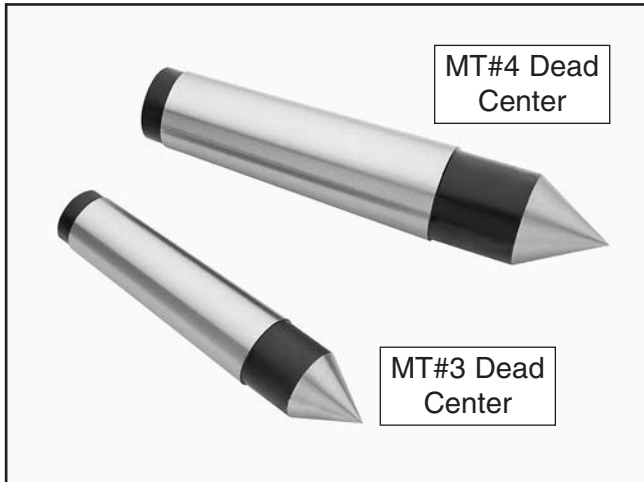
9. Repeat **Steps 6–8** until the desired accuracy is achieved.





# Centers

**Figure 42** shows one of the two included MT#3 dead centers and the MT#4 dead center.



**Figure 42.** Dead centers.

The spindle taper is an MT#4 and will only receive the MT#4 dead center. The tailstock quill taper is an MT#3 and will only receive the MT#3 dead centers.

## Dead Centers

A dead center is a one-piece center that does not rotate with the workpiece and is used to support long, slender workpieces in the tailstock.

A carbide-tipped dead center (not included) can better withstand the effects of friction than a typical dead center and is best used in the tailstock where the workpiece will rotate against it. The tip of a dead center must be generously lubricated during the operation to avoid premature wear and maximize smooth operation. Using low spindle speeds will also reduce the heat and wear from friction.

Use the dead center in the spindle for operations where the workpiece rotates with the center and does not generate friction.

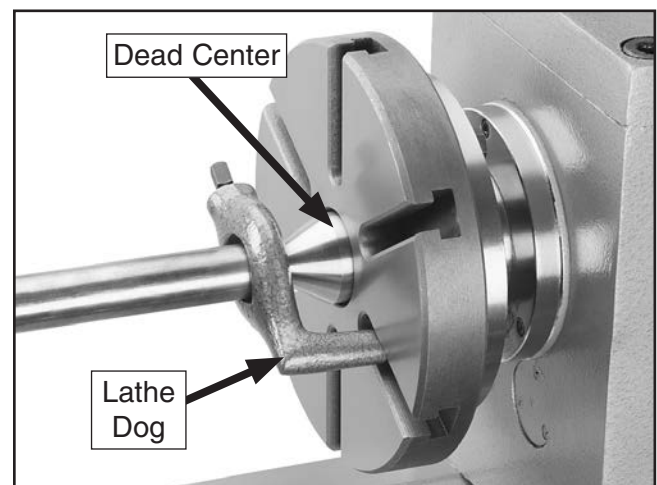
## Live Centers

A live center (not included) has bearings that allow the center tip and the workpiece to rotate together; it can be installed in the tailstock quill for higher speeds.

## Mounting Dead Center in Spindle

1. DISCONNECT LATHE FROM POWER!
2. Thoroughly clean and dry all threads and mating surfaces of the spindle bore and the center, making sure that no lint or oil remains on these surfaces.
- Note:** *This will prevent the tapered surfaces from seizing due to operational pressures, which could make it very difficult to remove the center.*
3. Mount a chuck or faceplate onto the spindle, whichever is correct for your operation.
4. Insert the center into the spindle bore through the chuck or faceplate.

**Figure 43** shows an example photo of a dead center installed in the spindle, using a lathe dog and faceplate for turning between centers.



**Figure 43.** Example photo of using a dead center with a faceplate and lathe dog.

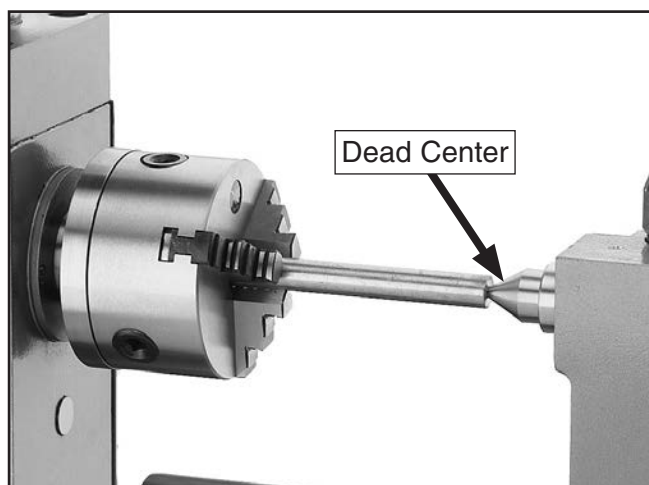


## Removing Center from Spindle

To remove the center from the spindle, insert a piece of round bar stock or similar tool through the outboard end (on the left side of the headstock). Have another person hold onto the center with a gloved hand or shop rag, then tap the center loose.

## Mounting Center in Tailstock

The included dead center or a live center can be used in the tailstock. Mounting instructions are the same for both. **Figure 44** shows an example photo of a dead center mounted in a tailstock.



**Figure 44.** Example photo of using a dead center installed in the tailstock.

### **NOTICE**

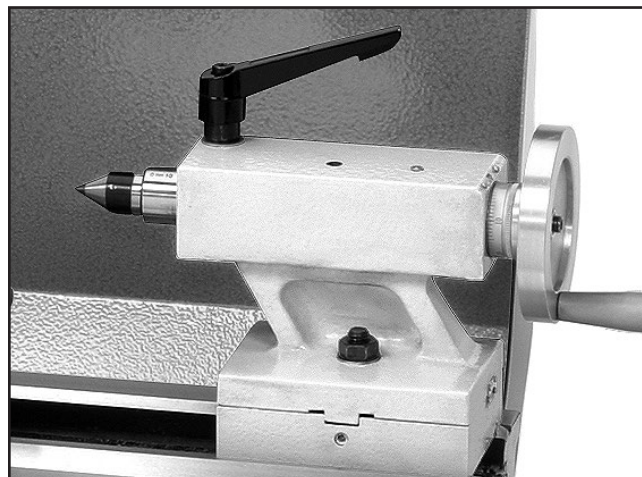
**To avoid premature wear of the dead center or damage to the workpiece, use low spindle speeds and keep the tip of the dead center mounted in the tailstock well lubricated.**

#### **To mount a center in the tailstock:**

1. DISCONNECT LATHE FROM POWER!
2. Thoroughly clean and dry the tapered mating surfaces of the tailstock quill bore and the center, making sure that no lint or oil remains on the tapers.

3. Use the quill handwheel to feed the quill out of the casting approximately 1" (see **Figure 1**).

**Note:** *The maximum quill travel is 2½", but we do not recommend extending the quill more than 2" or stability and accuracy will be reduced.*



**Figure 1.** Dead center inserted into tailstock.

4. Insert the center into the tailstock quill.
5. Seat the center firmly into the quill during workpiece installation by rotating the quill handwheel clockwise to apply pressure, with the center engaged in the center hole in the workpiece.

**Note:** *Only apply enough pressure with the tailstock quill to securely mount the workpiece between centers. Avoid overtightening the center against the workpiece, or it may become difficult to remove later, and it will result in excessive friction and heat, which may damage the workpiece and center.*

6. Secure the quill lock lever and tailstock lock nut.

## Removing Center from Tailstock

To remove the center from the quill, hold onto it with a gloved hand or shop rag, then rotate the quill handwheel counterclockwise to draw the quill back into the casting until the center releases.



## Mounting Workpiece Between Centers

1. DISCONNECT LATHE FROM POWER!
2. Drill center holes in both ends of the workpiece.
3. Install a dead center in the spindle with a lathe dog and a chuck or faceplate, then install a live center or carbide-tipped dead center in the tailstock.
4. Lubricate the workpiece center holes, then mount the workpiece between the centers and hold it in place with light pressure from the tailstock center.
5. Seat the center firmly into the quill by rotating the quill handwheel clockwise to apply pressure against the workpiece (see the example in **Figure 45**).

**Note:** Only apply enough pressure to securely mount the workpiece between centers. Avoid over-tightening the center against the workpiece, or it may become difficult to remove later. Also, over-tightening will result in excessive friction and heat, which may damage the workpiece or center.



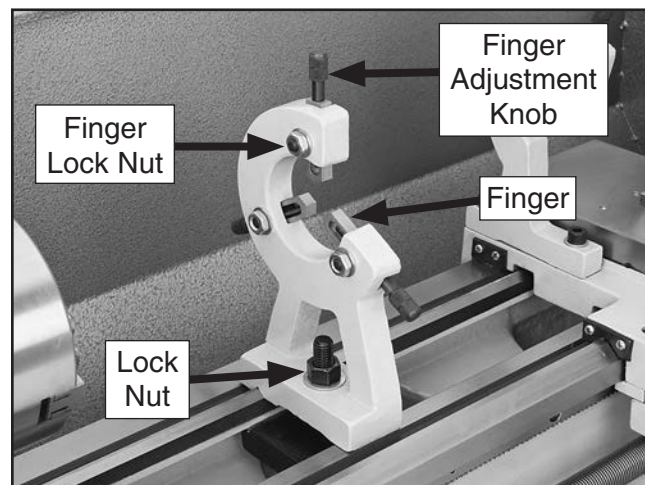
**Figure 45.** Example photo of a workpiece mounted between the centers.

6. Secure the quill lock lever and tailstock lock nut.

## Steady Rest

The steady rest supports long shafts and can be mounted anywhere along the length of the bedway.

Familiarize yourself with the steady rest components shown in **Figure 46** to better understand its operation.



**Figure 46.** Steady rest components.

### To install and use the steady rest:

1. DISCONNECT LATHE FROM POWER!
2. Thoroughly clean all mating surfaces, then place the steady rest base on the bedways so the triangular notch fits over the bedway prism.
3. Loosen the finger lock nuts shown in **Figure 46**, turn the finger adjustment knobs, and adjust the fingers as required for the workpiece.
4. Loosen the steady rest lock nut, position the steady rest where required to properly support the workpiece, then secure the lock nut.
5. Turn the finger adjustment knobs so the fingers are barely touching the workpiece, then tighten the finger lock nuts.
6. Lubricate the finger tips with an anti-seize lubricant during operation.

**Note:** Mill or file the tips if they show wear.



# Follow Rest

The follow rest mounts to the saddle with two cap screws (see **Figure 47**). It is used on long, slender parts to prevent workpiece deflection from cutting tool pressure during operation. Adjust the follow rest fingers in the same manner as the those on the steady rest.

**Note:** *To reduce the effects of friction, lubricate the finger tips with generous anti-sieze lubricant during operation.*

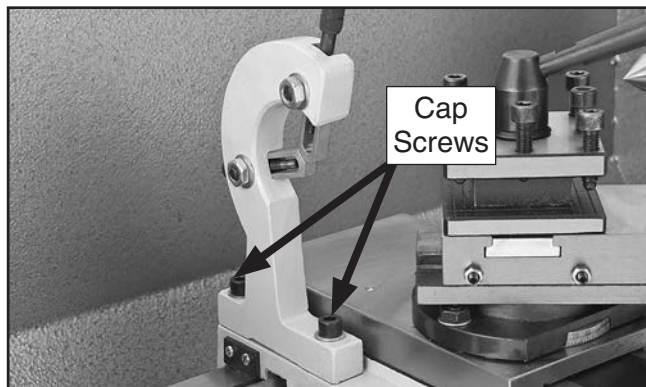


Figure 47. Follow rest attachment.

# Carriage & Slide Locks

The carriage and cross slide have locks that can be tightened to provide additional rigidity during operation, especially during heavy cuts.

See **Figure 48** to identify the locations of the locks for each device.

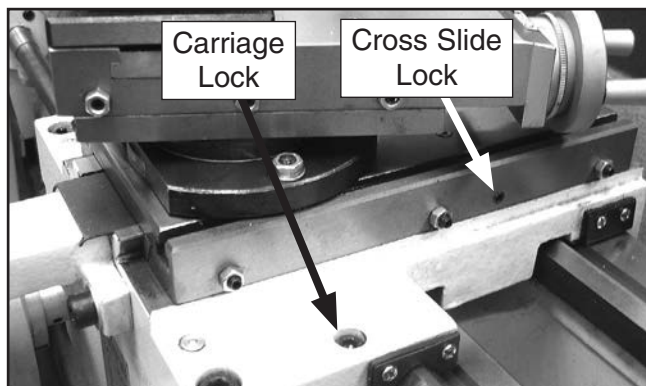


Figure 48. Carriage and cross slide locks.

# Compound Rest

The compound rest handwheel has an indirect-read graduated scale. This means the distance shown on the scale represents the actual distance the tool moves. The base of the compound rest has another graduated scale used for setting the cutting tool to a specific angle.

## Graduated Dial

Increments..... 0.001" (0.025mm)  
One Full Revolution..... 0.04" (1.02mm)

## Tool Needed

Qty

Open-End Wrench 14mm..... 1

## To set the compound rest at a certain angle:

1. Loosen the two hex nuts at the base of the compound rest (1 of 2 shown in **Figure 49**).

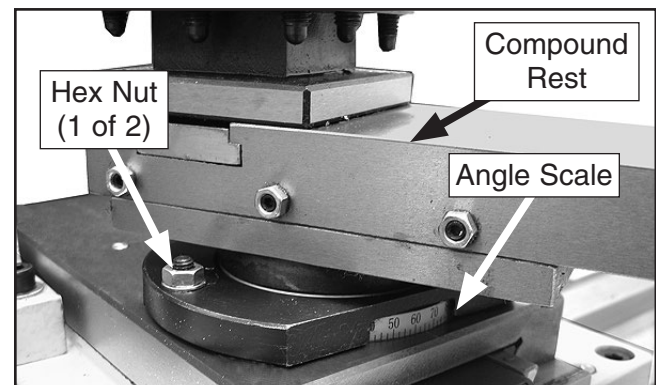


Figure 49. Compound rest.

2. Rotate the rest to the desired angle, as indicated by the scale at the base, then retighten the two hex nuts.

**Tip:** *The first time you set the angle of the compound rest for cutting threads, mark the location on the cross slide as a quick reference point. This will allow you to quickly return the compound rest to that exact angle the next time you need to cut threads.*





# Four-Way Tool Post

The four-way tool post is mounted on top of the compound rest and allows a maximum of four ½" tools to be loaded simultaneously.

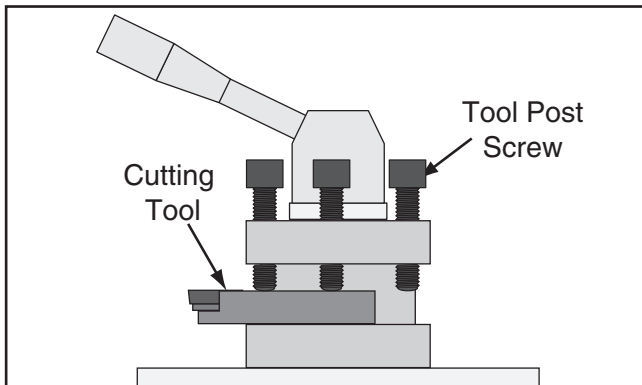
Each tool can be quickly indexed to the workpiece by loosening the top handle, rotating the tool post to the desired position, then re-tightening the handle to lock the tool into position.

## Installing Tool

Tool Needed	Qty
Hex Wrench 6mm.....	1

### To install a tool in the tool post:

1. Adjust the tool post screws so that the cutting tool can fit underneath them (see **Figure 50**).



**Figure 50.** Example of tool mounted in tool post.

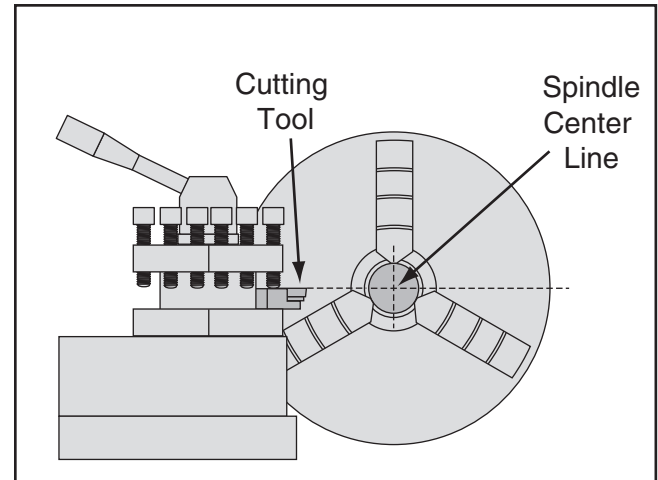
## WARNING

Over-extending a cutting tool from the post will increase the risk of tool chatter, breakage, or tool loosening during operation, which could cause metal pieces to be thrown at the operator or bystanders with great force. **DO NOT** extend a cutting tool more than 2.5 times the width of its cross-section (e.g., 2.5 x 0.5" = 1.25").

2. Firmly secure the cutting tool with at least two tool post screws.
3. Check and adjust the cutting tool to the spindle centerline, as instructed in the next subsection.

## Aligning Cutting Tool with Spindle Centerline

For most operations, the cutting tool tip should be aligned with the spindle centerline, as illustrated in **Figure 51**.



**Figure 51.** Cutting tool aligned with spindle centerline (viewed from tailstock).

There are a number of ways to check and align the cutting tool to the spindle centerline. If necessary, you can raise the cutting tool by placing steel shims underneath it. The shims should be as long and as wide as the cutting tool to properly support it.

### Below are two common methods:

- Move the tailstock center over the cross slide and use a dial indicator to measure the distance from the surface of the cross slide to the tip of the center. Adjust the cutting tool height so it is the same distance above the cross slide as the tailstock center.
- Align the tip of the cutting tool with a tailstock center, as instructed in the following procedure. For this to work, the tailstock must be aligned to the spindle centerline (refer to **Aligning Tailstock To Spindle Centerline** on **Page 34** for detailed instructions).

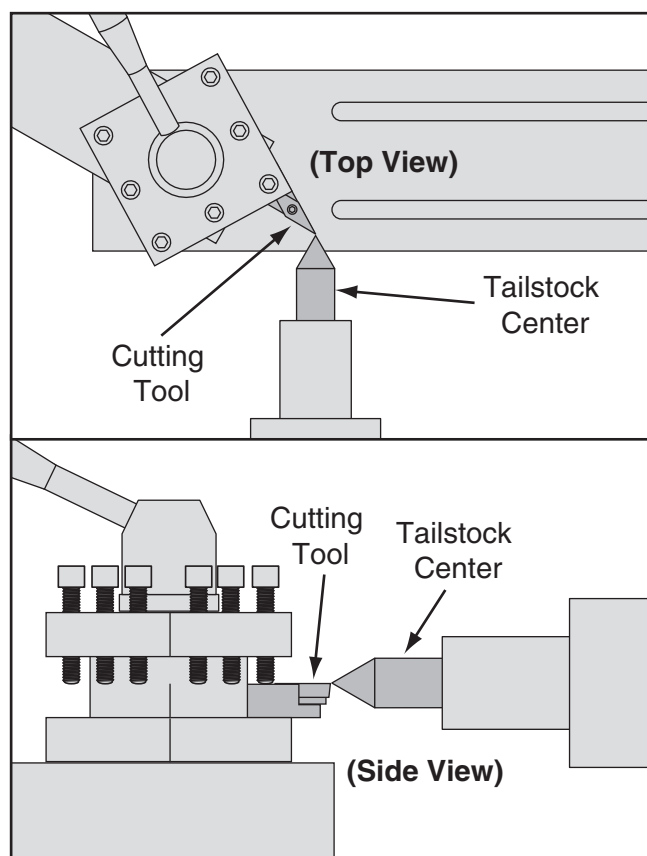




Tools Needed	Qty
Hex Wrench 6mm.....	1
Steel Shims .....	As Needed
Cutting Tool .....	1
Tailstock Center.....	1

**To align the cutting tool with the tailstock center:**

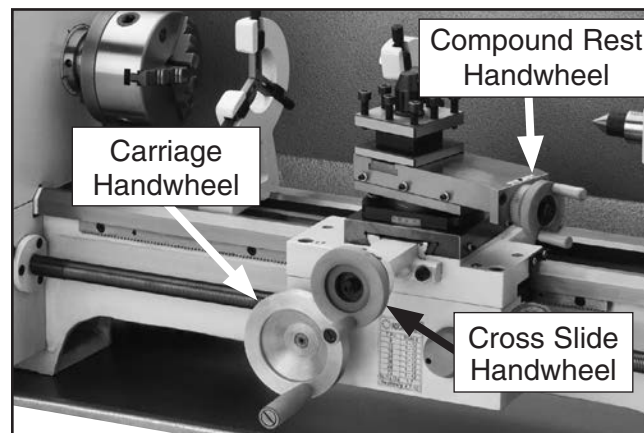
1. Mount the cutting tool in the tool post, then secure the post so the tool faces the tailstock.
2. Install a center in the tailstock, and position the center tip near the cutting tool tip.
3. Lock the tailstock and quill in place.
4. Adjust the height of the cutting tool so that the tool tip is aligned vertically and horizontally with the center tip, as shown in **Figure 52**.



**Figure 52.** Cutting tool aligned to the tailstock center.

## Manual Feed

The handwheels shown in **Figure 53** allow the operator to manually move the cutting tool.



**Figure 53.** Manual handwheel controls.

### Carriage Handwheel

Use the carriage handwheel to move the carriage left or right along the bed. This control is helpful when setting up the machine for turning or when manual movement is desired during turning operations.

### Cross Slide Handwheel

#### Graduated Dial

Increments..... 0.001" (0.025mm)  
One Full Revolution..... 0.06" (1.52mm)

Use this handwheel to move the tool toward and away from the work. Adjust the position of the graduated scale by holding the handwheel with one hand and turning the dial with the other. The cross slide handwheel has an indirect-read graduated dial. This means the distance shown on the scale represents the actual distance the tool moves.

### Compound Rest Handwheel

#### Graduated Dial

Increments ..... 0.001" (0.025mm)  
One Full Revolution..... 0.04" (1.02mm)

Use this handwheel to move the cutting tool linearly along the set angle of the compound rest. Set the compound rest angle by hand-rotating it and securing in place with two hex nuts. The compound rest has an indirect-read graduated dial.



# Spindle Speed

Using the correct spindle speed is important for safe and satisfactory results, as well as maximizing tool life.

To set the spindle speed for your operation, you will need to: 1) Determine the best spindle speed for the cutting task, and 2) configure the lathe controls to produce the required spindle speed.

## Determining Spindle Speed

Many variables affect the optimum spindle speed to use for any given operation, but the two most important are the recommended cutting speed for the workpiece material and the diameter of the workpiece, as noted in the formula shown in **Figure 54**.

$$\frac{\text{*Recommended Cutting Speed (FPM)} \times 12}{\text{Dia. of Cut (in inches)} \times 3.14} = \text{Spindle Speed (RPM)}$$

\*Double if using carbide cutting tool

**Figure 54.** Spindle speed formula for lathes.

Cutting speed, typically defined in feet per minute (FPM), is the speed at which the edge of a tool moves across the material surface.

A recommended cutting speed is an ideal speed for cutting a type of material in order to produce the desired finish and optimize tool life.

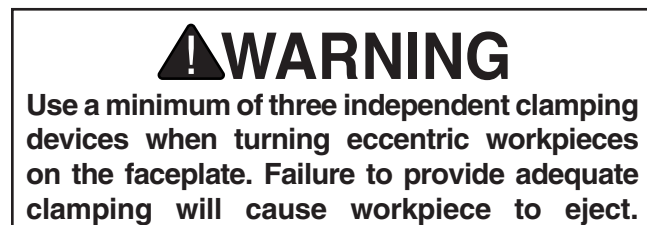
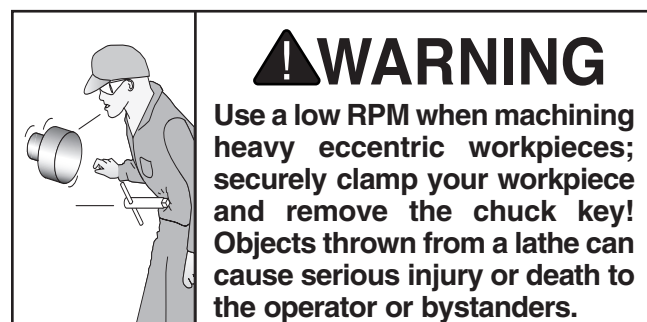
The books **Machinery's Handbook** or **Machine Shop Practice**, and some internet sites, provide excellent recommendations for which cutting speeds to use when calculating the spindle speed. These sources also provide a wealth of additional information about the variables that affect cutting speed and they are a good educational resource.

Also, there are a large number of easy-to-use spindle speed calculators that can be found on the internet. These sources will help you take into account the applicable variables in order to determine the best spindle speed for the operation.

## Setting Spindle Speed

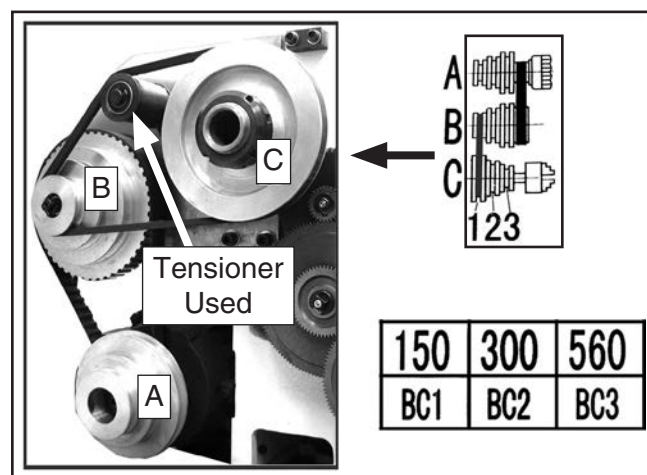
Selecting one of the available six spindle speeds (Model G0602) or one of the three spindle speed ranges (Model G0752) is performed by repositioning the V-belt(s) between the pulleys.

Tools Needed	Qty
Hex Wrench 5mm.....	1
Hex Wrench 8mm.....	1
Open-End Wrench 17mm.....	1



## G0602 Configuration Examples

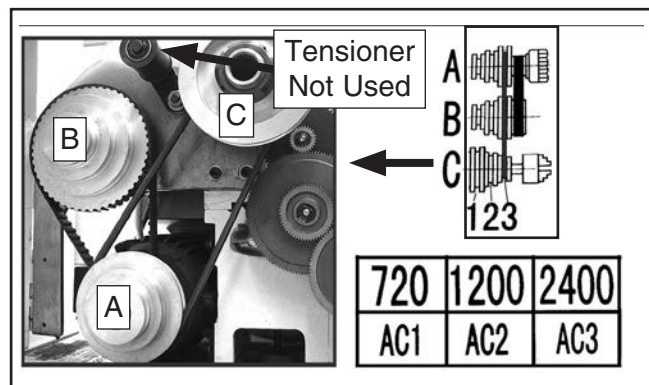
The 27½" belt is used on pulleys B and C (see **Figure 55**) with the tensioner for 50, 300, and 560 RPM.



**Figure 55.** Positioning belt for low speed.



The 33" belt is used on pulleys A and C (see **Figure 56**) without the tensioner for 720, 1200, and 2400 RPM.

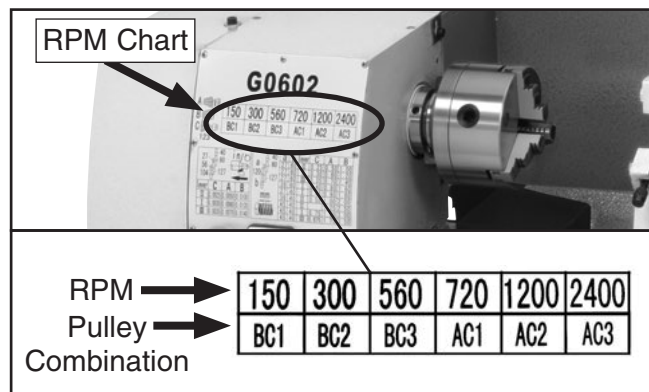


**Figure 56.** Positioning belt for high speed.

Follow along with the examples below for setting the Model G0602 spindle speed to gain a better understanding of this task.

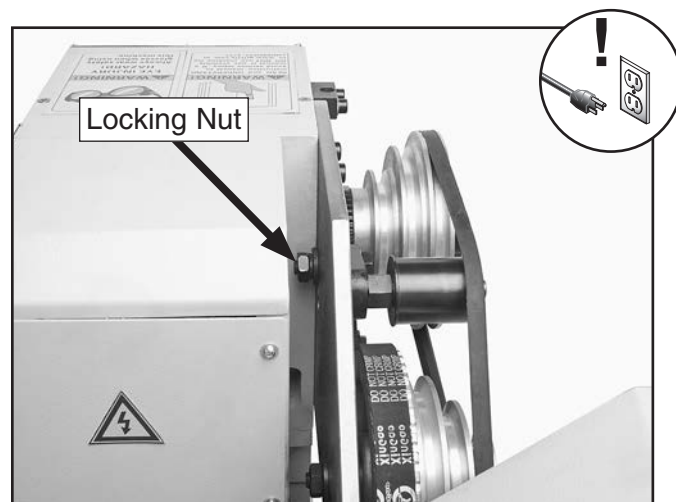
#### To set the spindle speed to 150 RPM:

1. DISCONNECT LATHE FROM POWER!
2. Refer to the RPM chart in **Figure 57** to determine the pulley combination you need to achieve a spindle speed of 150 RPM—it is **BC1**.



**Figure 57.** G0602 RPM chart.

3. Open the change gear cover, then loosen the tensioner lock nut located on the other side of the gear cover plate and the headstock.

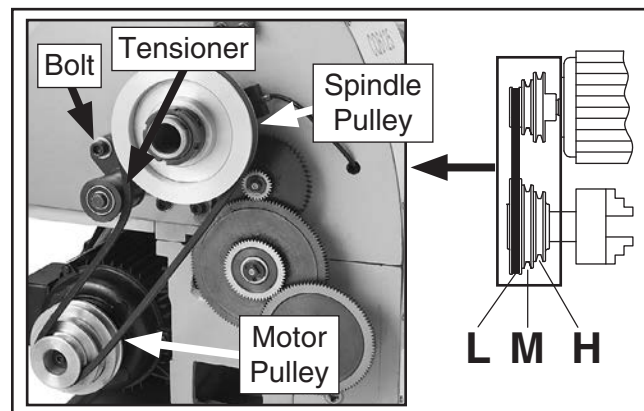


**Figure 58.** Location of tensioner lock nut.

4. Move the tensioner to install the 27½" belt between pulleys B and C, and in sheave 1, as shown in **Figure 55** on **Page 42**.
5. Re-tension the belt (refer to "Tensioning V-Belt" on **Page 63**), then close the change gear cover and secure it. The lathe is now set for a spindle speed of 150 RPM.

#### G0752 Configuration Example

The V-belt is positioned on the spindle and motor pulleys with the tensioner (see **Figure 59**) to select between low (100-800 RPM), medium (160-1300 RPM), and high (250-2000 RPM) speed ranges.



**Figure 59.** Positioning belt for low speed.



Follow along with this example for setting the spindle speed for the Model G0752 to gain a better understanding of this task.

**To set the spindle speed to 150 RPM:**

1. DISCONNECT LATHE FROM POWER!
2. Open the change gear cover, use an 8mm hex wrench to loosen the tensioner bolt, then move the tensioner out of the way.
3. Move the V-belt to the outer pulley sheaves to select the low speed range (100-800 RPM), as shown in **Figure 59**.
4. Re-tension the belt (refer to "Tensioning V-Belt" on **Page 63**) and secure the tensioner.
5. Turn the spindle direction switch to FWD, and press the ON button.
6. Adjust the spindle speed dial until the spindle speed display reads 150 RPM.

# Power Feed

The carriage has power feed capability when it is engaged with the lead screw. The rate that the carriage moves (feed rate) is controlled by V-belt, change gear, and gearbox dial configurations.

Feed rate and spindle speed must be considered together when determining the proper cutting speed for a given workpiece. The sources you use to determine the optimum spindle speed for an operation will also provide the optimal feed rate to use with that spindle speed.

Often, the experienced machinist will use the feeds and speeds given in their reference charts or web calculators as a starting point, then make minor adjustments to the feed rate (and sometimes spindle speed) to achieve the best results.

The carriage can alternately be driven by the leadscrew for threading operations. However, this section only covers using the power feed option for the carriage for non-threading operations. To learn how to power the carriage for threading operations, refer to **Threading** on **Page 46**.

Tools Needed	Qty
Hex Wrench 5mm.....	1
Hex Wrench 6mm.....	1





## Setting Power Feed Rate

The feed rate chart on the headstock displays the settings for the feed controls for inch feed rates.

Using the controls on the lathe, follow along with the example below to better understand how to set the lathe for the desired power feed rate.

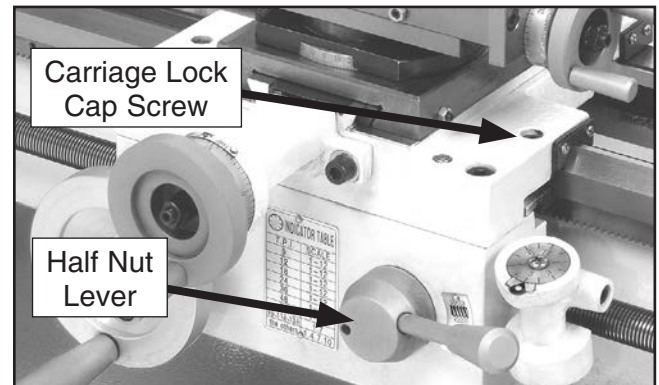
### Setting Power Feed Rate of 0.0120 in/rev

1. DISCONNECT LATHE FROM POWER!
2. Turn the feed dials to the numeral and letter indicated by the chart in **Figure 61**.
 

**Note:** You may have to rock the chuck by hand to get the gearbox gears to mesh.
3. Gather the required change gears, based upon the chart in **Figure 61**.
4. Remove the cap screw that secures the change gear cover, open the cover, then loosen the lash adjuster cap screw (see **Figure 61**) and swing the change gear assembly out of the way.
5. Remove the E-clips and cap screw from the change gears.
6. Lubricate the change gears (refer to **Page 55** for detailed instructions) and swap them out in the order shown on the chart in **Figure 61**, then re-install the E-clips and cap screw.

**Note:** All change gears are stamped with the number of teeth they have.

7. Move the lash adjuster so the gear backlash is between 0.003" to 0.008", tighten the lash adjuster cap screw, then close and secure the change gear cover.
8. Loosen the carriage lock (see **Figure 60**), and push down on the half nut lever to engage the power feed.

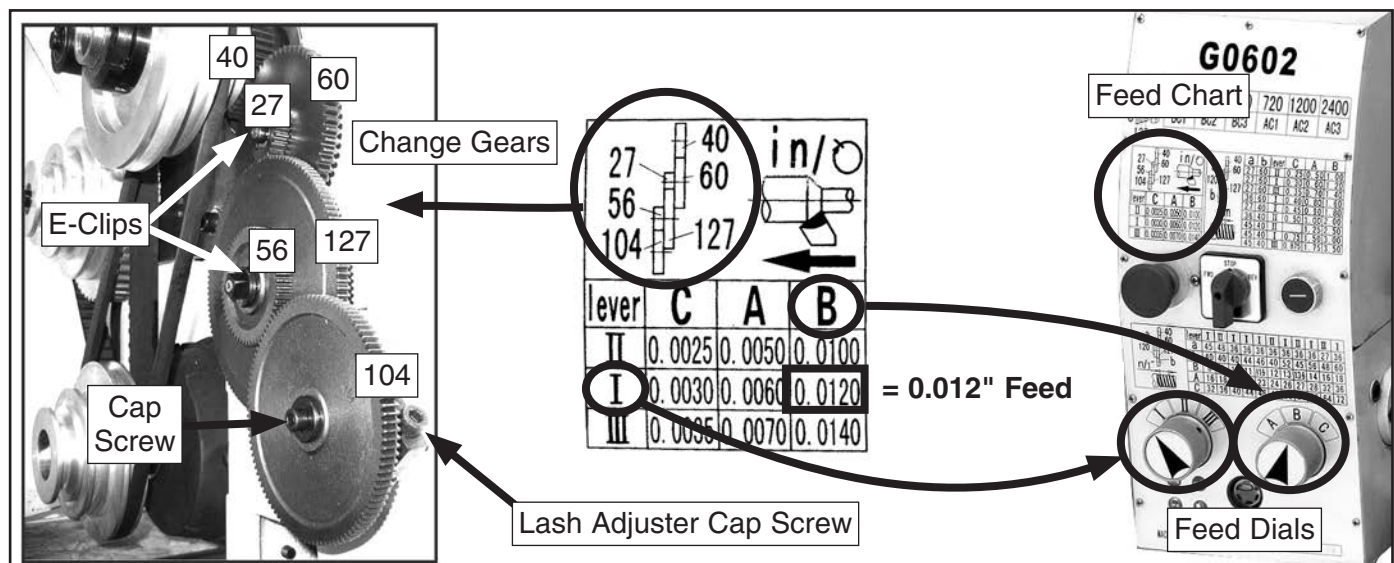


**Figure 60.** Carriage lock and feed control.

The lathe is now set up for a power feed rate of 0.0120 in/rev.

## NOTICE

To avoid potential carriage/chuck crash, disengage the half-nut lever immediately after completing power feeding operations.



**Figure 61.** Power feed setup.





# Threading

The following subsections describe how to use the threading controls and charts to set up the lathe for a threading operation. If you are unfamiliar with the process of cutting threads on a lathe, we strongly recommend that you read books, review industry trade magazines, or get formal training before attempting any threading projects.

## Headstock Threading Controls

The threading charts on the headstock face display the settings for metric and inch threading.

Using the controls on the lathe, complete the following examples to better understand how to set up the lathe for the desired threading operation.

### To set the lathe to cut 64 TPI threads:

1. DISCONNECT LATHE FROM POWER!
2. Turn the feed dials to the numeral and letter indicated by the chart in **Figure 62**.

**Note:** You may have to rock the chuck by hand to mesh the gearbox gears.

3. Gather the required change gears based upon the chart.

4. Open the change gear cover, loosen the lash adjuster (**Figure 61 on Page 45**) and swing the change gear assembly out of the way.
5. Remove the E-clips and cap screw from the change gears.
6. Lubricate the change gears (refer to **Page 55** for detailed instructions) and swap them out in the order shown on the chart in **Figure 62**, then secure the change gears with the E-clips and cap screw.

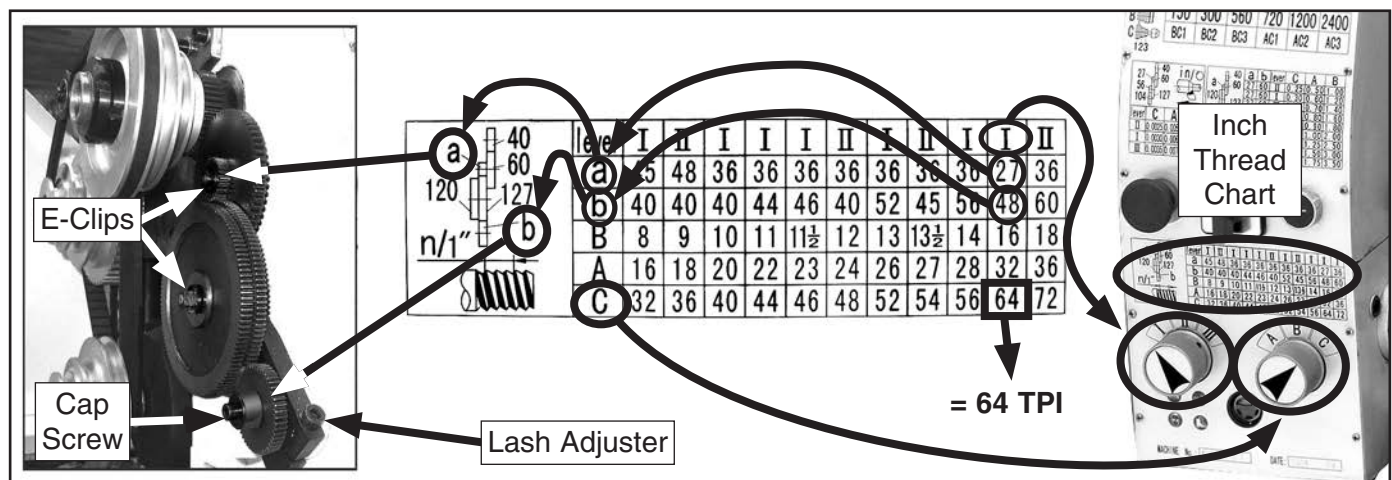
**Note:** All change gears are stamped with the number of teeth they have.

7. Move the lash adjuster so the gear backlash is between 0.003" to 0.008", tighten the lash adjuster cap screw, and close the cover.
8. Loosen the carriage lock (see **Figure 60 on Page 45**).

The lathe is now set up to cut 64 TPI threads.

## NOTICE

When threading keep your hand on the half-nut lever ready to disengage the half nut to avoid potential carriage/chuck crash.



**Figure 62.** Threading setup for 64 TPI.



## To set the lathe to cut 0.45 TPmm threads:

The steps for setting up the lathe for threading metric threads are the same as those for inch threads. Follow the instructions on **Page 46** for setting the thread pitch to 64 TPI, and refer to the chart below.

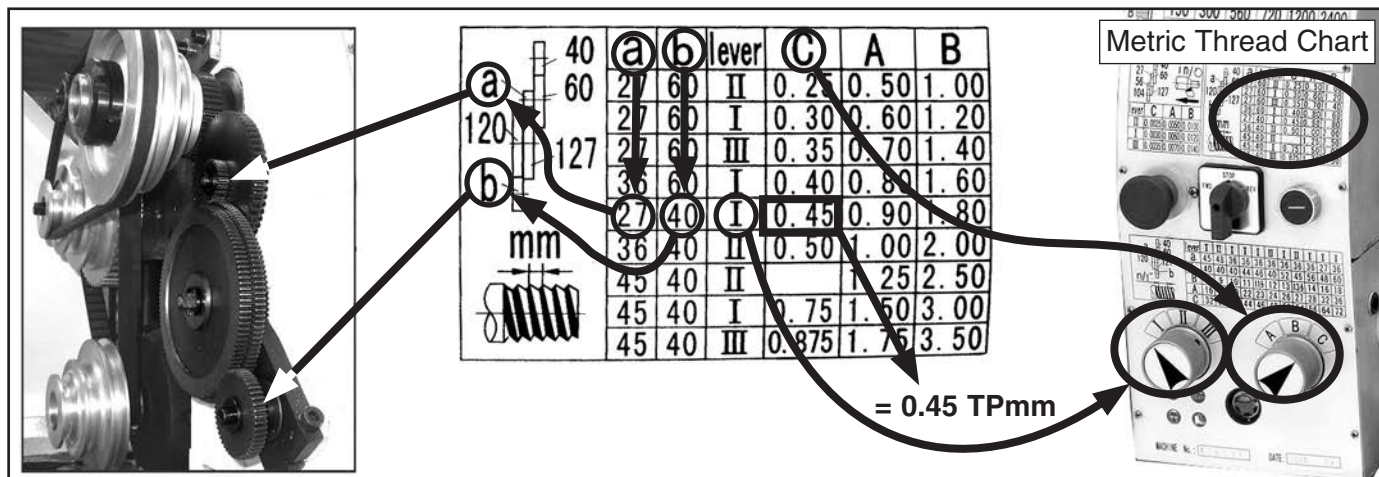


Figure 63. Metric threading setup.

## Apron Threading Controls

The half nut lever engages the carriage with the leadscrew, which moves the carriage and cutting tool along the length of the workpiece for threading and power feed operations (see **Figure 64**).

The numbers on the thread dial are used with the thread dial chart to show when to engage the half nut during inch threading. The thread dial numbers are not used when cutting metric threads, since this lathe has an inch leadscrew.

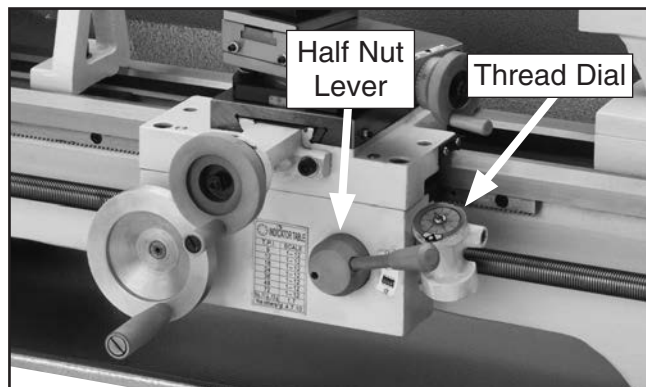


Figure 64. Half nut lever and thread dial.

## NOTICE

When threading, we recommend using the slowest speed possible and avoiding deep cuts, so you are able to disengage the half nut when required and prevent an apron crash!

## Thread Dial Chart

Find the TPI (threads per inch) that you want to cut in the left column of the thread dial chart (see **Figure 65**), then reference the dial number to the right of it. The dial numbers indicate when to engage the half nut for a specific thread pitch. The thread dial chart can also be found on the carriage beside the half nut lever.

Indicator Table	
TPI	SCALE
9	1-12
12	1-12
18	1-12
24	1-12
36	1-12
48	1-12
72	1-12
9½, 11½, 13½	1.7
Other TPI	1.4.7.10

Figure 65. Thread dial chart.

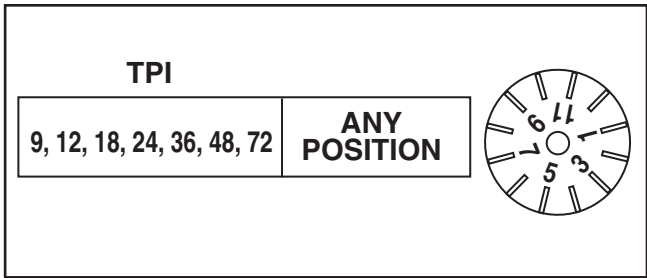
**Note:** Since this lathe has an inch leadscrew, do not use the thread dial when cutting metric threads. Instead you must leave the half nut engaged from the beginning until the threading operation is complete.



The following examples explain how to use the thread dial chart.

**9, 12, 18, 24, 36, 48, 72 TPI**

For these threading TPI's, use any of the lines on the thread dial (see **Figure 66**).



# SECTION 5: ACCESSORIES

## WARNING

Installing unapproved accessories may cause machine to malfunction, resulting in serious personal injury or machine damage. To reduce this risk, only install accessories recommended for this machine by Grizzly.

## NOTICE

Refer to our website or latest catalog for additional recommended accessories.

### SBCE3450—How to Run a Lathe

First printed in 1907 by South Bend Lathe, this 56th edition is an exact reprint from 1966. Well illustrated with vintage photos and drawings, this 128-page book is written specifically about the care and operation of a metal lathe. "This book is to aid the beginner or apprentice in the machine shop and the student in the school shop to secure a better understanding of the fundamental operations of modern lathe practice in use in modern industries in the United States."

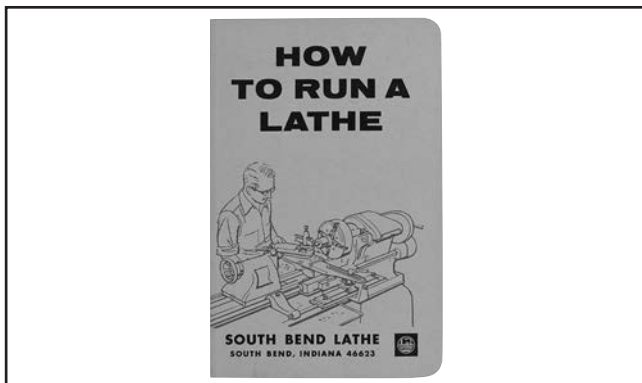


Figure 69. SBCE3450 South Bend Lathe~How to Run a Lathe book.

H2987— $\frac{1}{2}$ " Bent Lathe Dog  
H2988—1" Bent Lathe Dog  
H2989— $1\frac{1}{2}$ " Bent Lathe Dog  
H2990—2" Bent Lathe Dog  
H2991—3" Bent Lathe Dog

### H6204—High Precision Drill Chuck $\frac{5}{8}$ " x JT3

Unlike most keyed drill chucks, this one is made to very tight tolerances on CNC equipment and is one of the finest drill chucks on the market today. It has very high gripping strength and is suitable for heavy-duty, high-speed drilling. Each chuck includes a high visibility chuck key. Specifications:  $\frac{1}{32}$ " -  $\frac{5}{8}$ " x JT #3.



Figure 70. H6204 Drill Chuck.

### G1677—Drill Chuck Arbor - MT3/JT3

This Drill Chuck Arbor is used to adapt drill chucks to your drill press, milling machine or lathe. Long end: MT #3, Short end: J.T. #3.



Figure 71. G1677 Drill Chuck Arbor.

### G9849—Magnetic Base/Dial Indicator Combo

Precision measurements and set-ups have never been so easy. Magnetic base engages with just the turn of a switch and allows pinpoint adjustment. The dial indicator features 0–1" travel and has a resolution of 0.001". Set includes a molded case for protection and convenience.

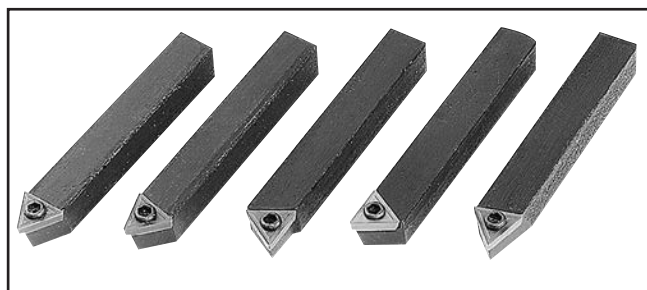


Figure 72. G9849 Magnetic Base/Dial Indicator.



**G5640—5-Pc. 1/2" Indexable Carbide Tool Set**  
**G6706—Replacement TiN Carbide Inserts**

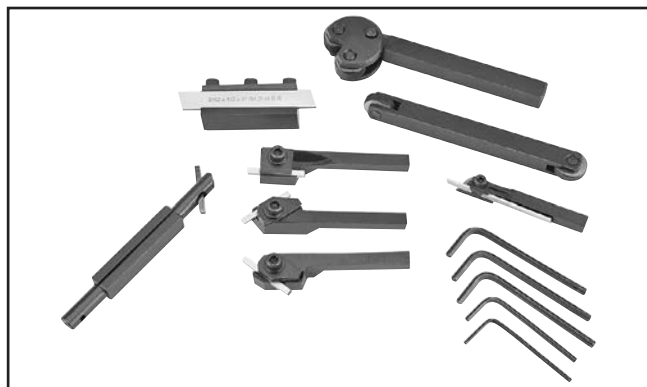
Five-piece turning tool set features indexable carbide inserts with "spline" type hold-down screw that allow indexing without removing the screw. Each set includes AR, AL, BR, BL, and E style tools with carbide inserts, hex wrench, extra hold-down screws and a wooden case.



**Figure 73.** G5639 5 Pc. Indexable Tool Set.

**T10255—Mini Lathe Tooling Kit**

This convenient Mini Lathe Tool Kit includes right, left and straight turning tool holders with 1/8" HSS tool bits, boring bar with holder and 1/8" HSS tool bit, cut off tool holder with 3/32" HSS blade and 3/8" shank, mini cut off tool holder with 1/16" HSS blade and 5/16" shank, knurling tool holder with pivoting head, single horizontal/vertical knurling tool holder and assorted hex wrenches. Maximum shank size is 1/2".



**Figure 74.** T10255 Mini Lathe Tooling Kit.

**H5930—4-Pc Center Drill Set 60°**

**H5931—4-Pc Center Drill Set 82°**

Double ended HSS Center Drills are precision ground. Includes sizes 1-4.

**H7616—Oil Can w/Plastic Nozzle**

**H7617—Oil Can w/Flexible Plastic Nozzle**

These high-pressure oil cans are perfect for lubricating the ball oilers found on your machine. Each can holds 5 ounces of oil.



**Figure 75.** High-pressure oil cans for ball oilers.

**T23962—ISO 68 Moly-D Machine Oil, 5 gal.**

**T23963—ISO 32 Moly-D Machine Oil, 5 gal.**

Moly-D oils are some of the best we've found for maintaining the critical components of machinery because they tend to resist run-off and maintain their lubricity under a variety of conditions—as well as reduce chatter or slip. Buy in bulk and save with 5-gallon quantities.



**Figure 76.** ISO 68 and ISO 32 machine oil.

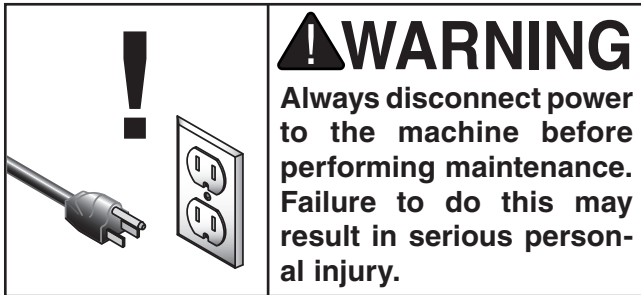
**order online at [www.grizzly.com](http://www.grizzly.com) or call 1-800-523-4777**





# SECTION 6: MAINTENANCE

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## Schedule

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### Ongoing

To help reduce the risk of injury and ensure proper machine operation, if you ever observe any of the items below, shut down the machine immediately and fix the problem before continuing operations:

- Loose mounting bolts or fasteners.
- Worn, frayed, cracked, or damaged wires.
- Guards or covers removed.
- Emergency STOP button not working correctly or not requiring you to reset it before starting the machine again.
- Damaged or malfunctioning components.

### Daily, Before Operations

- Check/add gearbox oil (**Page 52**).
- Add oil to the ball oilers (**Page 53**).
- Clean/lubricate the leadscrew and carriage rack (**Page 54**).
- Lubricate the bedways (**Page 54**).
- Compound slide (**Page 54**).
- Disengage the half nut on the carriage (to prevent crashes upon startup).
- Ensure carriage lock bolt is loose.

### Daily, After Operations

- Turn the spindle direction switch to STOP, and press the Emergency STOP button (to prevent accidental startup).
- Vacuum/clean all chips and swarf from bed and slides.
- Wipe down all unpainted or machined surfaces with an oiled rag.
- Add oil to the ball oilers (**Page 53**).

### Annually

- Change the gearbox oil (**Page 52**).
- Lubricate the change gears (**Page 55**).
- Check/level bedway (**Page 21**).

## Cleaning/Protecting

---

Because of its importance, we recommend that the cleaning routine be planned into the workflow schedule.

Typically, the easiest way to clean swarf from the machine is to use a wet/dry shop vacuum that is dedicated for this purpose. The small chips left over after vacuuming can be wiped up with a slightly oiled rag. Avoid using compressed air to blow off chips, as this may drive them deeper into the moving surfaces or cause sharp chips to fly into your face or hands.

All unpainted and machined surfaces should be wiped down daily to keep them rust free and in top condition. This includes any surface that is vulnerable to rust if left unprotected (especially parts that are exposed to water soluble cutting fluid). Use a quality rust protectorate such as SLIPIT® or Boeshield® to prevent corrosion.



# Lubrication

The lathe has numerous metal-to-metal sliding surfaces that require regular lubrication to maintain smooth movement and ensure long-lasting operation.

Other than the lubrication points covered in this section, all other bearings are internally lubricated and sealed at the factory. Simply leave them alone unless they need to be replaced.

Before performing any lubrication task, **DISCONNECT LATHE FROM POWER!**

**Important:** Before adding lubricant to ball oilers and grease fittings, clean off entry points to prevent contamination of lubricant.

Use the schedule and information in the chart below as a daily guide for lubrication tasks. We recommend using Grizzly Model T23962 or T23963 lubricants (see Accessories, **Page 50**) for most of the lubrication tasks.

Lubrication Task	Frequency	Page Ref.
Quick-Change Gearbox	Daily	<b>This page</b>
Ball Oilers	Daily	<b>53</b>
Leadscrew & Carriage Rack	Daily	<b>54</b>
Bedways	Daily	<b>54</b>
Compound Slide	Daily	<b>54</b>
Change Gears	Annually	<b>55</b>

## NOTICE

The recommended lubrication is based on light-to-medium usage. Keeping in mind that lubrication helps to protect the value and operation of the lathe, these lubrication tasks may need to be performed more frequently than recommended here, depending on usage.

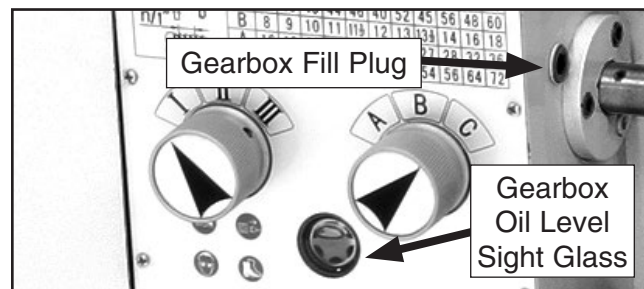
**Failure to follow reasonable lubrication practices as instructed in this manual could lead to premature failure of lathe components and will void the warranty.**

## Quick-Change Gearbox

Oil Type .... Grizzly T23962 or ISO 68 Equivalent  
 Reservoir Capacity ..... 1 Pint  
 Check/Add Frequency ..... Daily  
 Change Frequency ..... Annually

### Checking Oil Level

The gearbox reservoir has the proper amount of oil when the oil level in the sight glass is approximately  $\frac{3}{4}$  full. The oil sight glass is located below the gearbox control dials, as shown in **Figure 77**.

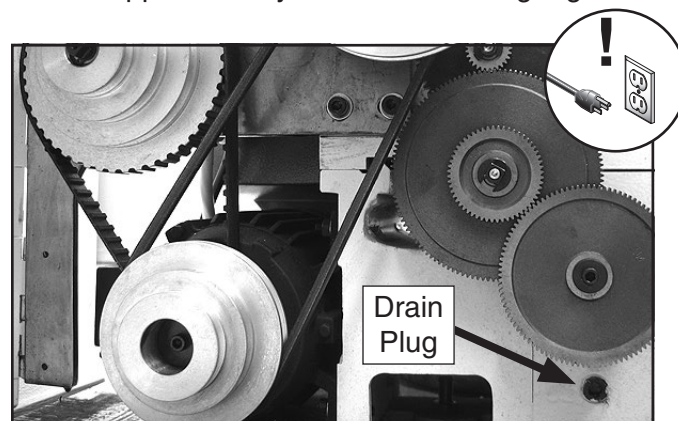


**Figure 77.** Headstock oil level sight glass.

After break-in, change the oil in the gearbox, then again after three months. Afterwards, change the oil on an annual basis or more frequently if extreme machine use requires it.

### Adding Oil

Use an 8mm hex wrench to remove the gearbox fill plug (see **Figure 77**), then add the oil until the level is approximately  $\frac{3}{4}$  full in the oil sight glass.



**Figure 78.** Location of the quick-change gearbox drain plug.

### Draining Oil

Remove the fill plug (**Figure 77**), place a catch pan under the quick-change gearbox drain plug (see **Figure 78**). Use an 8mm hex wrench to loosen the drain plug, remove it, then allow the reservoir to empty. Re-install the drain plug.



## Ball Oilers

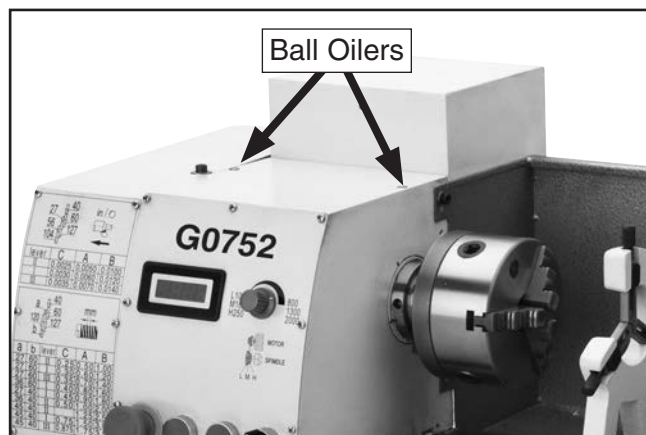
Oil Type .... Grizzly T23963 or ISO 32 Equivalent  
 Oil Amount..... 1 or 2 Squirts/Fill  
 Lubrication Frequency ..... Daily

This lathe has 10 ball oilers that should be oiled on a daily basis before beginning operation.

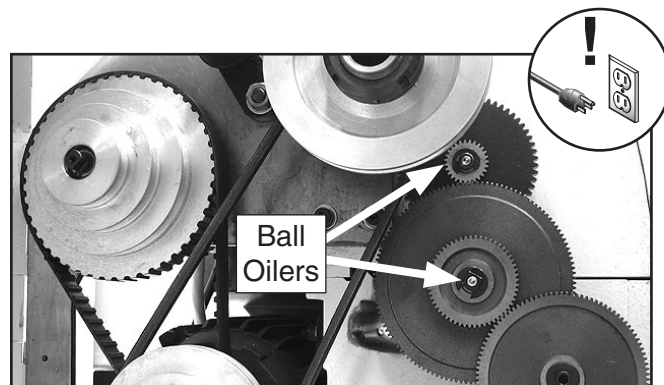
Proper lubrication of ball oilers is done with a pump-type oil can that has a plastic or rubberized cone tip. We do not recommend using metal needle or lance tips, as they can push the ball too far into the oiler, break the spring seat, and lodge the ball in the oil galley.

Lubricate the ball oilers before and after machine use, and more frequently under heavy use. When lubricating ball oilers, first clean the outside surface to remove any dust or grime. Push the tip of the oil can nozzle against the ball oiler to create a hydraulic seal, then pump the oil can once or twice. If you see sludge and contaminants coming out of the lubrication area, keep pumping the oil can until the oil runs clear. When finished, wipe away any excess oil.

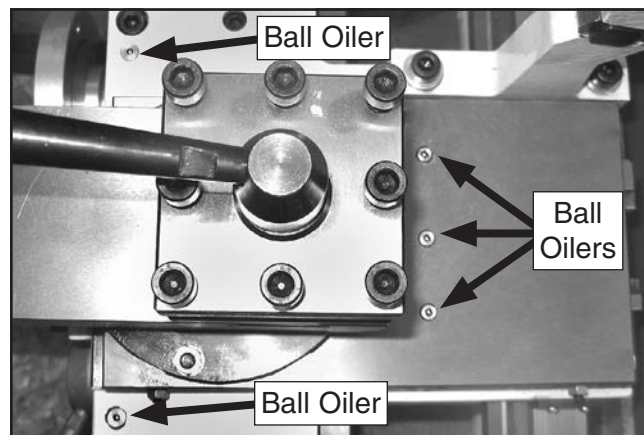
Refer to **Figures 79–83** to identify the location of each ball oiler.



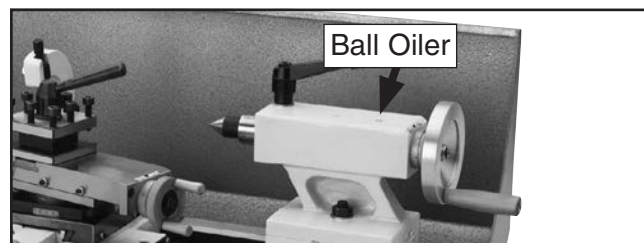
**Figure 79.** Spindle bearing ball oilers.



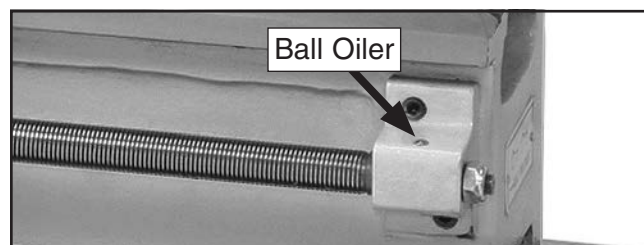
**Figure 80.** Change gear ball oilers.



**Figure 81.** Carriage and cross slide ball oilers.



**Figure 82.** Tailstock ball oiler.



**Figure 83.** Leadscrew end bearing ball oilers.

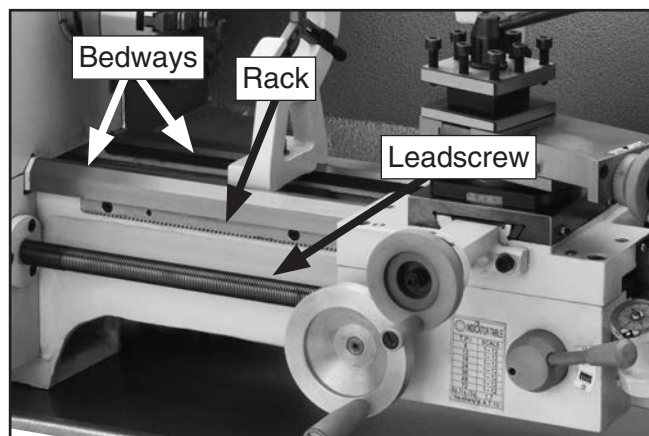


## Leadscrew & Carriage Rack

Oil Type .... Grizzly T23962 or ISO 68 Equivalent  
Oil Amount..... As Needed  
Lubrication Frequency ..... Daily

Before lubricating the leadscrew and carriage rack (see **Figure 84**), clean them first with mineral spirits. Use a stiff brush to help remove any debris or grime. Apply a thin coat of oil along the length of the carriage rack. Use a stiff brush to make sure oil is applied into the leadscrew threads.

**Note:** *In some environments, abrasive material can become caught in the leadscrew lubricant and drawn into the half nut. In this case, lubricate the leadscrew with a quality dry lubricant.*



**Figure 84.** Leadscrew, rack and bedways.

## Bedways

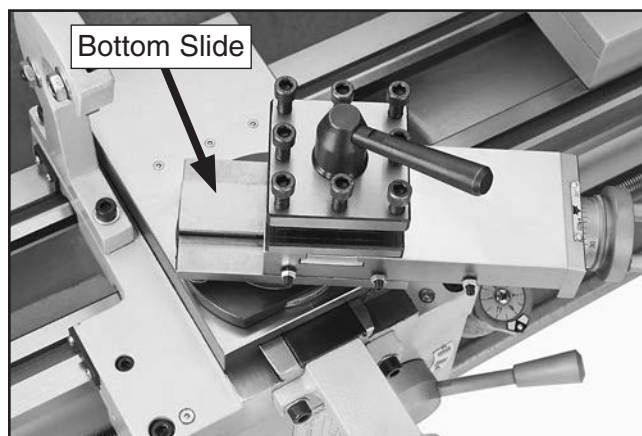
Oil Type .... Grizzly T23962 or ISO 68 Equivalent  
Oil Amount..... As Needed  
Lubrication Frequency ..... Daily

Before lubricating the bedways (see **Figure 84**), clean it with mineral spirits. Apply a thin coat of oil along the length of the bedway. Move the steady rest, carriage, and tailstock to access the entire length of the bedways.

## Compound Slide

Oil Type .... Grizzly T23962 or ISO 68 Equivalent  
Oil Amount.....Thin Coat  
Lubrication Frequency ..... Daily

Use the handwheel to move the compound slide all the way toward you (see **Figure 85**), then wipe clean the bottom slide with a rag and mild solvent. Apply the lubricant and move the compound slide back and forth to distribute the oil.



**Figure 85.** Compound bottom slide.

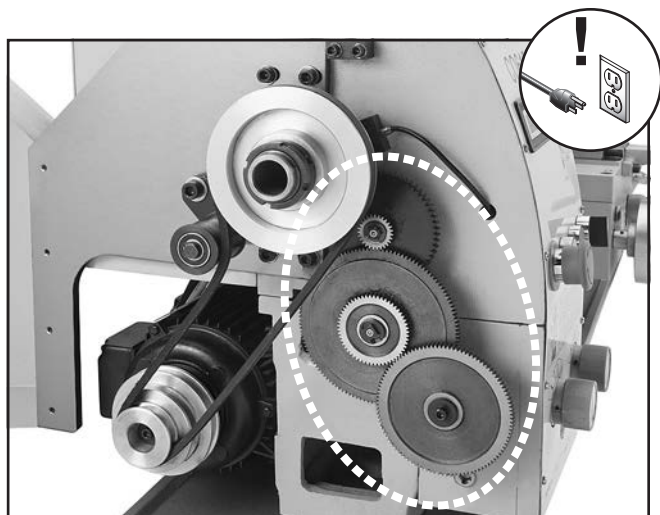




## Change Gears

Grease Type.....NLGI#2  
Oil Amount.....Thin Coat  
Frequency..... Annually or When Changing

The change gears, shown in **Figure 86**, should always have a thin coat of heavy grease to minimize corrosion, noise, and wear. Wipe away excess grease that could be thrown onto the V-belts and reduce optimal power transmission from the motor.



**Figure 86.** Change gears.

### To handle and care for the change gears:

Make sure to clean and lubricate any gears you install or change. Be very careful during handling and storage—the grease coating on the gears will easily pickup dirt or debris, which can then spread to the other gears and increase the rate of wear.

Make sure the change gear cover remains installed whenever possible to keep the gears free of dust or debris from the outside environment.

### To lubricate the change gears:

1. DISCONNECT LATHE FROM POWER!
2. Open the change gear cover and remove all the change gears shown in **Figure 86**.
3. Clean the change gears thoroughly with mineral spirits to remove the old grease. Use a small brush if necessary to clean between the teeth.
4. Clean the shafts, and wipe away any grease splatters in the vicinity and on the inside of the change gear cover.
5. Using a clean brush, apply a thin layer of grease on the gears. Make sure to get grease between the gear teeth, but do not fill the teeth valleys.
6. Install the change gears and mesh them together with 0.003"—0.008" backlash. Once the gears are meshed together, apply a small dab of grease between them where they mesh together—this grease will be distributed when the gears rotate and re-coat any areas scraped off during installation.
7. Close the change gear cover before re-connecting the lathe to power.





# Machine Storage

---

To prevent the development of rust and corrosion, the lathe must be properly prepared if it will be stored for a long period of time. Doing this will ensure the lathe remains in good condition for later use.

## To prepare the lathe for storage:

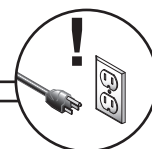
1. Run the lathe and bring the gearbox reservoir to operating temperature, then drain and refill with clean oil.
2. DISCONNECT LATHE FROM POWER!
3. Thoroughly clean all unpainted, bare metal surfaces, then apply a liberal coat of way oil, heavy grease, or rust preventative. Take care to ensure these surfaces are completely covered but that the rust preventative or grease is kept off of painted surfaces.
4. Lubricate the machine as outlined in the **Lubrication** section beginning on **Page 52**. Be sure to use an oil can to purge all ball oilers and oil passages with fresh oil.
5. Loosen or remove all belts so they do not become stretched during the storage period. (Be sure to place a maintenance note near the power button as a reminder that the belts have been loosened or removed.)
6. Cover the lathe and place it in a dry area that is out of direct sunlight and away from hazardous fumes, paint, solvents, or gas. Fumes and sunlight can bleach or discolor paint.
7. Every few months do the following:
  - Rotate by hand all gear-driven components a few times in several gear selections. This will keep the bearings, bushings, gears, and shafts well lubricated and protected from corrosion—especially during the winter months.
  - Slide the carriage, tailstock, and steady rest down the lathe bed to make sure that way spotting is not beginning to occur.



# SECTION 7: SERVICE

Review the troubleshooting and procedures in this section if a problem develops with your machine. If you need replacement parts or additional help with a procedure, call our Technical Support. **Note:** Please gather the serial number and manufacture date of your machine before calling.

## Troubleshooting



### Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a circuit breaker trips.	<ol style="list-style-type: none"> <li>Emergency stop button engaged or at fault.</li> <li>Spindle direction switch turned OFF or at fault.</li> <li>Start capacitor at fault.</li> <li>Wall fuse/circuit breaker is blown/tripped; short in electrical system; start-up load too high for circuit.</li> <li>Wiring is open/has high resistance.</li> <li>Contactor not getting energized/has poor contacts.</li> <li>Motor connection wired wrong.</li> <li>Motor spindle direction switch at fault.</li> <li>Inverter/control box at fault (G0752 only).</li> <li>Motor at fault.</li> </ol>	<ol style="list-style-type: none"> <li>Rotate button clockwise until it pops out to reset it for operation; replace if not working properly.</li> <li>Turn spindle direction switch to FWD or REV. Ensure switch has correct voltage. Replace if faulty.</li> <li>Test/replace if faulty.</li> <li>Verify circuit is rated for machine amp load; troubleshoot and repair cause of overload; replace weak breaker; find/repair electrical short.</li> <li>Check for broken wires or disconnected/corroded connections, and repair/replace as necessary.</li> <li>Test for power on all legs and contactor operation. Replace unit if faulty.</li> <li>Correct motor wiring connections (<b>Page 67</b>).</li> <li>Replace switch.</li> <li>Inspect inverter/controller box; replace if faulty.</li> <li>Test/repair/replace.</li> </ol>
Loud, repetitious noise coming from lathe at or near the motor.	<ol style="list-style-type: none"> <li>Pulley set screws or keys are missing or loose.</li> <li>Motor fan is hitting the cover.</li> </ol>	<ol style="list-style-type: none"> <li>Inspect keys and set screws. Replace or tighten if necessary.</li> <li>Tighten fan, shim cover, or replace items.</li> </ol>
Motor overheats.	<ol style="list-style-type: none"> <li>Motor overloaded.</li> </ol>	<ol style="list-style-type: none"> <li>Allow motor to cool; reduce load on motor.</li> </ol>
Motor is loud when cutting, or bogs down under load.	<ol style="list-style-type: none"> <li>Excessive depth of cut or feed rate.</li> <li>Spindle speed or feed rate wrong for cutting operation.</li> <li>Cutting tool is dull.</li> </ol>	<ol style="list-style-type: none"> <li>Decrease depth of cut or feed rate.</li> <li>Refer to the feeds and speed charts in <b>Machinery's Handbook</b> or a speeds and feeds calculator on the internet.</li> <li>Sharpen or replace the cutting tool.</li> </ol>



## Operation

Symptom	Possible Cause	Possible Solution
Entire machine vibrates upon startup and while running.	<ol style="list-style-type: none"> <li>1. Workpiece is unbalanced.</li> <li>2. Workpiece is hitting stationary object.</li> <li>3. Loose or damaged V-belt(s).</li> <li>4. V-belt pulleys are not properly aligned.</li> <li>5. Chuck or faceplate is unbalanced or not installed properly.</li> <li>6. Change gears not aligned or no backlash.</li> <li>7. Worn or broken gear present.</li> <li>8. Broken gear or bad bearing.</li> <li>9. Spindle bearings at fault.</li> </ol>	<ol style="list-style-type: none"> <li>1. Re-install workpiece as centered with the spindle bore as possible.</li> <li>2. Stop lathe immediately and correct interference problem.</li> <li>3. Re-tension/replace the V-belt(s) as necessary (see <b>Page 64</b>).</li> <li>4. Align the V-belt pulleys.</li> <li>5. Check installation; re-balance chuck or faceplate; contact a local machine shop for help.</li> <li>6. Adjust change gears and establish backlash.</li> <li>7. Inspect gears, and replace if necessary.</li> <li>8. Replace broken gear or bearing.</li> <li>9. Reset spindle bearing preload or replace worn spindle bearings.</li> </ol>
Bad surface finish.	<ol style="list-style-type: none"> <li>1. Wrong spindle speed or feed rate.</li> <li>2. Dull tooling or poor tool selection.</li> <li>3. Tool height not at spindle centerline.</li> <li>4. Too much play in gibs.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust for appropriate spindle speed and feed rate.</li> <li>2. Sharpen tooling or select a better tool for the intended operation.</li> <li>3. Adjust tool height to spindle centerline (see <b>Page 40</b>).</li> <li>4. Tighten gibs (see <b>Page 61</b>).</li> </ol>
Tapered tool difficult to remove from tailstock quill.	<ol style="list-style-type: none"> <li>1. Quill is not retracted all the way back into the tailstock.</li> <li>2. Contaminants not removed from taper before inserting into quill.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn the quill handwheel until it forces the tapered tool out of quill.</li> <li>2. Clean the taper and bore, then re-install tool.</li> </ol>
Cross slide, compound rest, or carriage feed has sloppy operation.	<ol style="list-style-type: none"> <li>1. Gibs are out of adjustment.</li> <li>2. Handwheel is loose or backlash is high.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust gibs (see <b>Page 61</b>).</li> <li>2. Tighten handwheel fasteners, adjust handwheel backlash to a minimum (see <b>Page 60</b>).</li> </ol>
Cross slide, compound, or carriage feed handwheel hard to move.	<ol style="list-style-type: none"> <li>1. Dovetail ways loaded with shavings, dust, or grime.</li> <li>2. Gib screws are too tight.</li> <li>3. Backlash setting too tight.</li> <li>4. Bedways are dry.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean ways and re-lubricate.</li> <li>2. Loosen gib screw(s) slightly (see <b>Page 61</b>).</li> <li>3. Slightly loosen backlash setting (see <b>Page 60</b>).</li> <li>4. Lubricate bedways/ball oilers.</li> </ol>
Cutting tool or machine components vibrate excessively during cutting.	<ol style="list-style-type: none"> <li>1. Tool holder not tight enough.</li> <li>2. Cutting tool sticks too far out of tool holder; lack of support.</li> <li>3. Gibs are out of adjustment.</li> <li>4. Dull cutting tool.</li> <li>5. Incorrect spindle speed or feed rate.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check for debris, clean, and re-tighten.</li> <li>2. Re-install cutting tool so no more than <math>\frac{1}{3}</math> of the total length is sticking out of tool holder.</li> <li>3. Adjust gibs at affected component (see <b>Page 61</b>).</li> <li>4. Replace or sharpen cutting tool.</li> <li>5. Use the recommended spindle speed and feed rate.</li> </ol>



Symptom	Possible Cause	Possible Solution
Workpiece is tapered.	1. Headstock and tailstock are not properly aligned with each other.	1. Re-align the tailstock to the headstock spindle centerline (see <b>Page 34</b> ).
Chuck jaws will not move or do not move easily.	1. Chips lodged in the jaws or scroll plate.	1. Remove jaws, clean and lubricate scroll plate and jaws, then replace jaws.
Carriage will not feed or is hard to move.	1. Quick-change gears are not all engaged. 2. Half nut lever engaged. 3. Carriage lock is tightened down. 4. Chips have loaded up on bedways. 5. Bedways are dry and in need of lubrication. 6. Gibs are too tight. 7. Gears or shear pin broken.	1. Adjust gear dials. 2. Disengage half nut lever for manual feeding. 3. Check to make sure the carriage lock bolt is fully released. 4. Frequently clean away chips that load up during turning operations and re-lubricate. 5. Lubricate bedways/ball oilers. 6. Loosen gibs screw(s) slightly (see <b>Page 61</b> ). 7. Replace gears or shear pin (see <b>Page 62</b> ).
Quick-change gear change dials will not shift into position.	1. Gears not aligned inside headstock/quick change gearbox.	1. Rotate spindle by hand with light pressure on the dial until gear falls into place.



# Backlash Adjustment

Backlash is the amount of free play felt while changing rotation directions with the handwheel. This can be adjusted on the compound rest and cross slide leadscrews. Before beginning any adjustment, make sure all associated components are cleaned and lubricated, and the locks are loose.

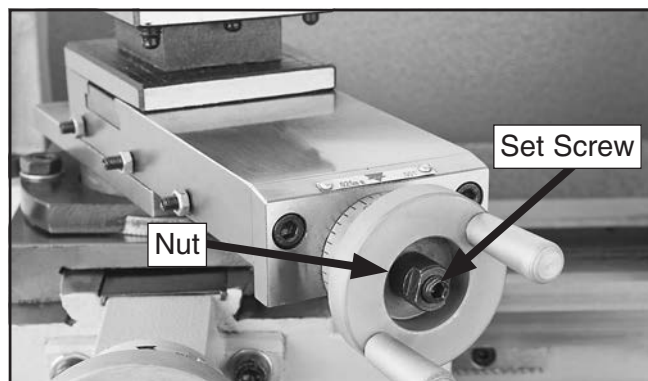
## NOTICE

Reducing backlash to less than 0.002" is impractical and can lead to accelerated wear to the leadscrew and other components. Avoid the temptation to overtighten the backlash nut or screw while adjusting.

### Compound Rest

Tools Needed:	Qty
Hex Wrench 5mm.....	1
Open-End Wrench 10mm.....	1

The compound rest backlash is adjusted by loosening or tightening the nut and set screw shown in **Figure 87** to remove play between the handwheel and the leadscrew collar.



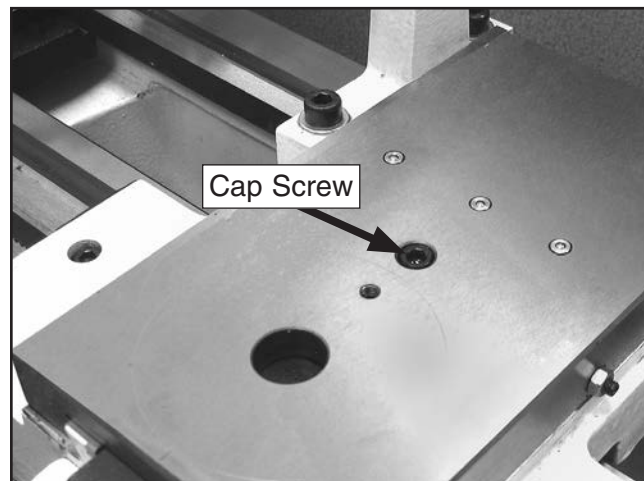
**Figure 87.** Compound rest backlash adjustment set screws.

To adjust the backlash, loosen the compound rest nut and set screw, turn the handwheel counter-clockwise until the compound rest moves, then tighten the nut until the backlash is approximately 0.002"–0.003", as indicated on the graduated dial. Tighten the set screw to secure the setting.

### Cross Slide

Tools Needed:	Qty
Hex Wrench 4mm.....	1
Hex Wrench 5mm .....	1
Open-End Wrench 14mm.....	1

The cross slide backlash is adjusted by loosening the cap screw shown in **Figure 88**. The screw pushes down on a wedge and forces the leadscrew nut apart, taking up lash between the nut and leadscrew.



**Figure 88.** Cross slide backlash adjustment cap screw.

To adjust the backlash, remove the compound rest. Then, rock the cross slide handwheel back and forth, and tighten the cap screw slowly until the backlash is approximately 0.002"–0.003" as indicated on the graduated dial.

If you end up adjusting the nut too tight, loosen the cap screw, turn the handwheel back and forth until it turns freely—then try again.

Re-install the compound rest when you are finished.





# Gib Adjustment

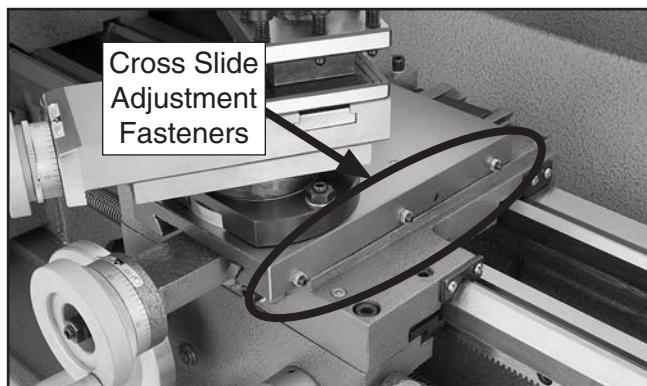
The goal of adjusting the cross slide and compound slide gibs is to remove sloppiness or "play" from the ways without making them overly stiff and difficult to move.

In general, loose gibs cause poor finishes and tool chatter; however, over-tightened gibs cause premature wear and make the handwheels difficult to turn.

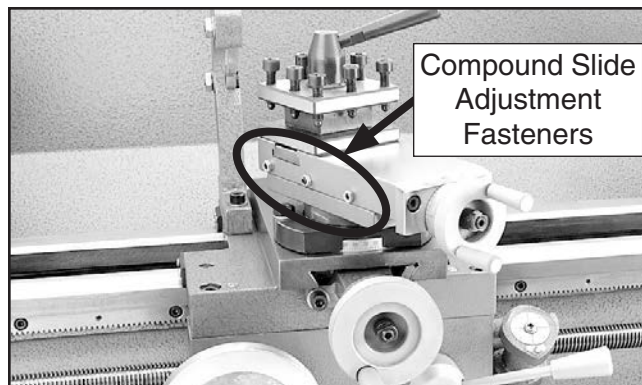
Tools Needed	Qty
Open-End Wrench 8mm.....	1
Hex Wrench 2.5mm.....	1

## To adjust the cross slide and compound slide gibs:

1. DISCONNECT LATHE FROM POWER!
2. Loosen the three hex nuts on the side of the slide (see **Figures 89–90**).



**Figure 89.** Cross slide gib adjustment hex nuts and set screws.



**Figure 90.** Compound slide gib adjustment hex nuts and set screws.

3. Make adjustments in small and equal increments to the three set screws, then test the movement of the slide by rotating the handwheel.
- Note:** *Turning the set screws clockwise will tighten the gib, and turning them counter-clockwise will loosen the gib.*
4. When you are satisfied with the gib adjustment, keep the set screws from moving and re-tighten the hex nuts to secure the settings.
  5. Re-check the movement of the slide and, if necessary, repeat **Steps 2–4**.



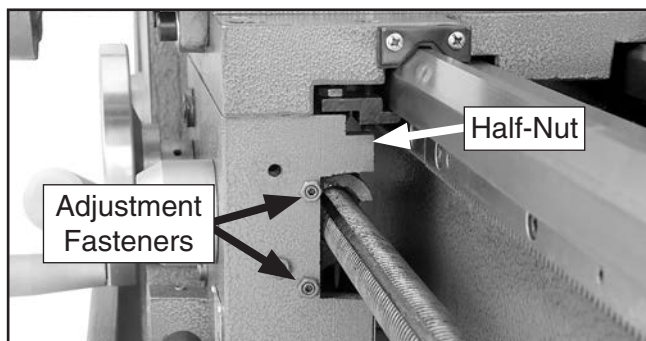
# Half Nut Adjustment

The clamping pressure of the half nut is fully adjustable with a gib that can be loosened or tightened by two set screws. Use this procedure to adjust the half nut if it becomes loose from wear, or it is too tight for your preferences. A half nut that is too loose will make it difficult to produce accurate work; one that is too tight will increase the rate of wear on itself and the leadscrew.

Tools Needed	Qty
Open-End Wrench 8mm.....	1
Hex Wrench 5mm.....	1
Hex Wrench 2.5mm.....	1

## To adjust the half nut:

1. DISCONNECT LATHE FROM POWER!
2. Disengage the half nut, then remove the thread dial.
3. Loosen the two adjustment hex nuts shown in **Figure 91**, then adjust the set screws in small, even increments so one end of the gib does not become tighter than the other.



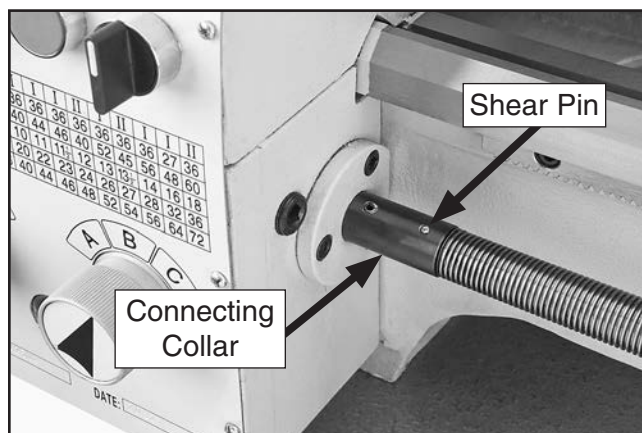
**Figure 91.** Typical half nut gib adjustment.

4. Engage/disengage the half nut several times and notice how it feels. The adjustment is correct when the half nut has a slight drag while opening and closing. The movement should not be too stiff or too sloppy.
5. Repeat **Steps 3–4**, if necessary, until you are satisfied with the half nut pressure.
6. While keeping the set screws from moving, re-tighten the hex nuts, then re-install the thread dial.

# Leadscrew Shear Pin Replacement

The longitudinal leadscrew is secured to the feed rate gearing in the headstock with the use of a soft-metal shear pin (see **Figure 92**). The shear pin is designed to break and disengage power to the leadscrew to help protect more expensive lathe components if you crash your carriage or take too large of a cut and overload the lathe.

Contact Grizzly Customer Service at (570) 546-9663 to order a replacement shear pin (Part # P0602815).



**Figure 92.** Longitudinal leadscrew shear pin.

Tools Needed	Qty
Hammer.....	1
Punch 2.5mm .....	1

## To replace the shear pin:

1. DISCONNECT LATHE FROM POWER!
2. Rotate the leadscrew so the shear pin faces up and down. If the connecting collar rotates independently from the leadscrew, then rotate the collar so the shear pin holes align with those in the leadscrew.
3. Use the punch and hammer to drive out the pieces of the old shear pin.
4. Make sure the holes in the collar and leadscrew are aligned, then tap the new shear pin completely through the holes in the collar and leadscrew.



# V-Belt Tension & Replacement

V-Belts stretch and wear with use, so check the tension on a monthly basis to ensure optimal power transmission. Replace the V-belts if they become cracked, frayed, or glazed.

On the Model G0602, the **low range** V-belt tension is controlled by a tensioner between the secondary drive pulley (B) and spindle (C) pulley. The **high range** V-belt between the spindle (C) and motor (A) pulleys is tensioned by the motor.

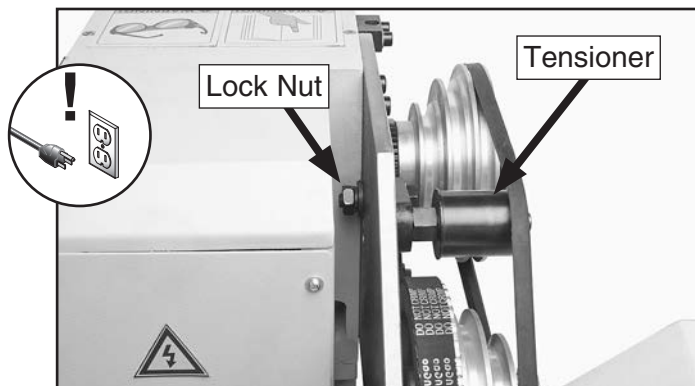
On the Model G0752, V-belt tension is controlled by a tensioner between the spindle and motor pulleys.

Tools Needed	Qty
Open-End Wrench 17mm.....	1
Hex Wrench 5mm.....	1
Hex Wrench 8mm.....	1

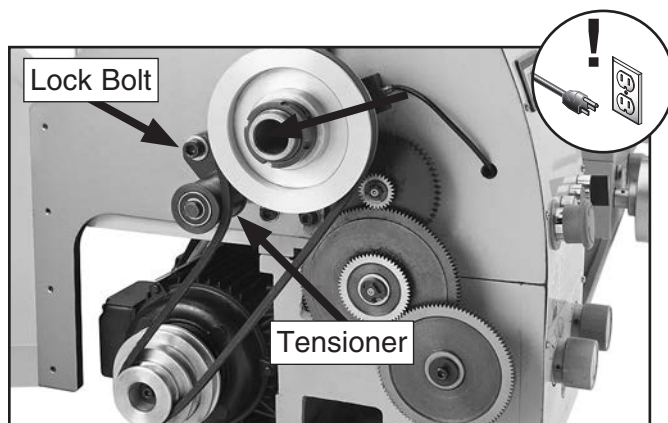
## Tensioning V-Belt

To tension the Model G0602 low range V-belt or Model G0752 V-belt:

1. DISCONNECT LATHE FROM POWER!
2. Open the change gear cover.
3. Loosen the tensioner lock nut (Model G0602) or tensioner lock bolt (Model G0752) shown in **Figures 93–94**.



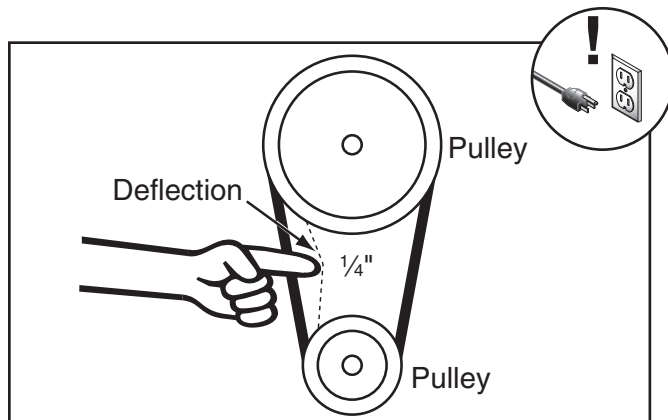
**Figure 93.** Model G0602 tensioner and lock nut.



**Figure 94.** Model G0752 tensioner and lock bolt.

4. Push the tensioner against the V-belt to tension it, then secure the tensioner.

The V-belt is correctly tensioned when there is approximately ¼" deflection when it is pushed with moderate pressure, as shown in **Figure 95**.



**Figure 95.** Correct V-belt deflection.

—If there is more than ¼" deflection when the V-belt is pushed with moderate pressure, loosen the tensioner, adjust it so the tension is correct, then secure the tensioner.

5. Secure the change gear cover.



## To tension the Model G0602 high range V-belt:

1. Follow **Steps 1–3** in "Tensioning Timing Belt" on **Page 65**.

2. Lower the motor and re-tighten the mounting hex nuts. The *high range* V-belt is correctly tensioned when there is approximately  $\frac{1}{4}$ " deflection when it is pushed with moderate pressure, as shown in **Figure 95** on **Page 63**.

—If there is more than  $\frac{1}{4}$ " deflection when the V-belt is pushed with moderate pressure, loosen the motor mount nuts, lower the motor as needed, then tighten the nuts.

3. Check the timing belt tension (refer to **Step 5** of "Tensioning Timing Belt" on **Page 65**).

4. Secure the change gear cover.

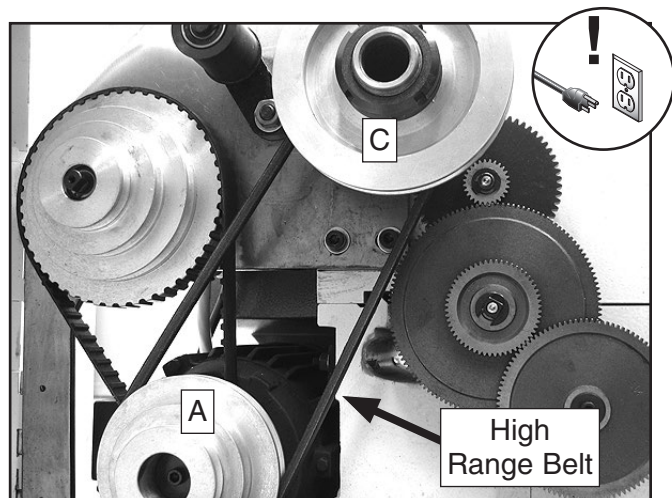
## Replacing V-Belt

1. DISCONNECT LATHE FROM POWER!

2. Open the change gear cover.

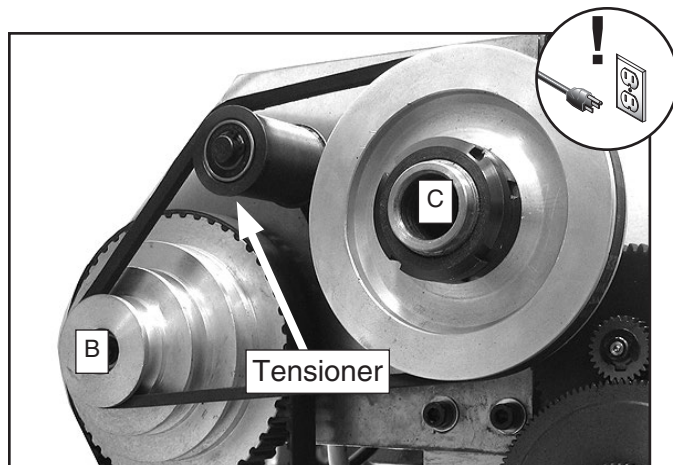
3. **Model G0602:**

—If the *high range belt* (**Figure 96**) needs to be replaced, loosen the motor mount hex nuts, (see **Figure 99** on **Page 65**), raise the motor, and carefully roll the belt off of pulleys **A** and **C**. Install a new V-belt, then follow the steps in "To tension the Model G0602 high range V-belt" above.



**Figure 96.** Model G0602 high-range belt.

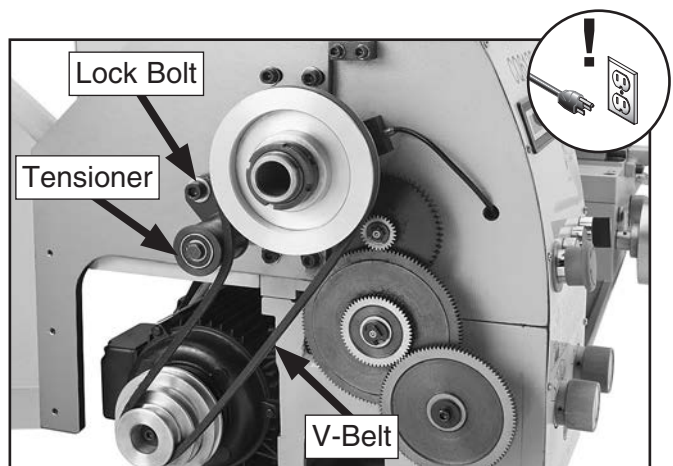
—If the *low range belt* between pulleys **B** and **C** (see **Figure 97**) needs to be replaced, loosen the tensioner lock nut (see **Figure 93** on **Page 63**), move the tensioner down, roll the belt off the pulleys, then re-install the new V-belt. Follow **Steps 4-5** on **Page 63** to tension the belt.



**Figure 97.** Model G0602 low-range belt.

## Model G0752:

Loosen the tensioner lock bolt, then pivot the tensioner to the left and secure it temporarily. Remove the V-belt (see **Figure 98**) and re-install the new one. Follow **Steps 4-5** on **Page 63** to tension the belt.



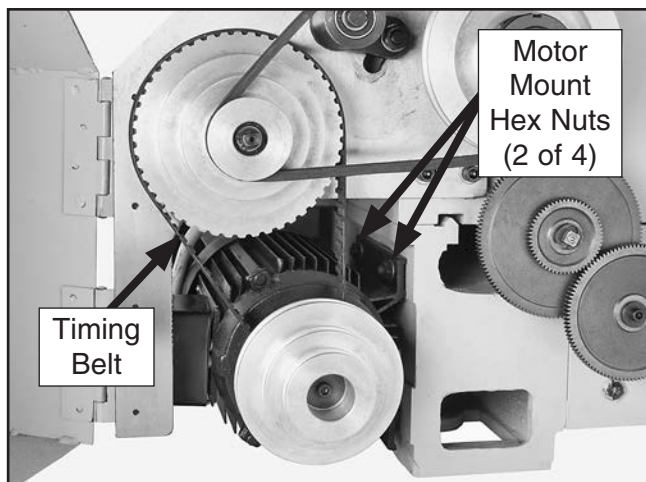
**Figure 98.** Model G0752 V-Belt.





# Timing Belt Tension & Replacement

On the Model G0602 the timing belt transfers power from the motor to the secondary drive pulley (see **Figure 99**). If the timing belt becomes excessively worn or damaged, you will need to replace it.



**Figure 99.** Timing belt and motor mount hex nuts.

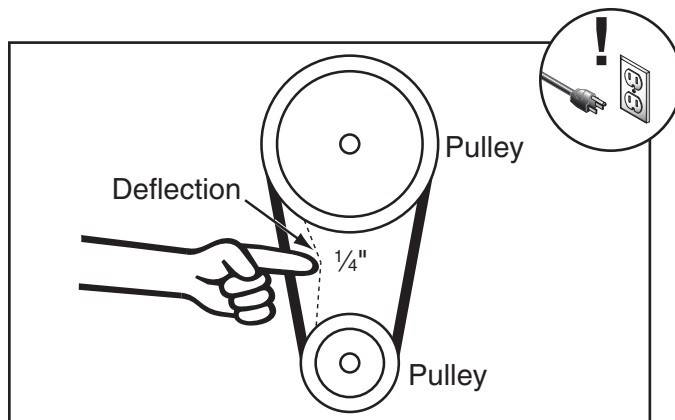
Tools Needed	Qty
Hex Wrench 5mm.....	1
Open-End Wrench 14mm.....	1

## Tensioning Timing Belt

1. DISCONNECT LATHE FROM POWER!
2. Open the change gear cover.
3. Loosen the motor mount hex nuts (see **Figure 99**).

**Note:** *It may be more convenient to access the motor mount hex nuts if you first remove the rear splash guard.*

4. Lower the motor and re-tighten the mounting hex nuts.
5. Check the timing belt tension: It is correctly tensioned when there is approximately  $\frac{1}{4}$ " deflection when it is pushed with moderate pressure, as shown in **Figure 100**.



**Figure 100.** Correct timing-belt deflection.

—If there is more than  $\frac{1}{4}$ " deflection when the belt is pushed with moderate pressure, loosen the motor mount nuts, lower the motor, adjust belt tension as required, then tighten the nuts.

—If the high range V-belt is installed, check the V-belt tension. Refer to "To tension the Model G0602 high range V-belt" instructions on **Page 64**.

6. Secure the change gear cover.

## Replacing Timing Belt

1. DISCONNECT LATHE FROM POWER!
2. Open the change gear cover.
3. Loosen the four motor mount hex nuts (see **Figure 99**) then remove the low or high range V-belt (refer to **Replacing V-Belt** on **Page 64**).

**Note:** *It may be more convenient to access the motor mount hex nuts if you first remove the rear splash guard.*

4. Raise the motor up, roll the old timing belt off the pulleys and replace it with a new one, making sure that the belt teeth are seated in the pulley indents.
5. Re-install the high or low range V-Belt—depending upon your setup (refer to **Replacing V-Belt** on **Page 64**).
6. Tension the timing belt and V-belt. Refer to **Tensioning Timing-Belt** on this page, and the instructions for tensioning the applicable V-belt on **Pages 63– 64**.





# SECTION 8: WIRING

These pages are current at the time of printing. However, in the spirit of improvement, we may make changes to the electrical systems of future machines. Compare the manufacture date of your machine to the one stated in this manual, and study this section carefully.

If there are differences between your machine and what is shown in this section, call Technical Support at (570) 546-9663 for assistance BEFORE making any changes to the wiring on your machine. An updated wiring diagram may be available. **Note:** Please gather the serial number and manufacture date of your machine before calling. This information can be found on the main machine label.

## WARNING

### Wiring Safety Instructions

**SHOCK HAZARD.** Working on wiring that is connected to a power source is extremely dangerous. Touching electrified parts will result in personal injury including but not limited to severe burns, electrocution, or death. Disconnect the power from the machine before servicing electrical components!

**MODIFICATIONS.** Modifying the wiring beyond what is shown in the diagram may lead to unpredictable results, including serious injury or fire. This includes the installation of unapproved after-market parts.

**WIRE CONNECTIONS.** All connections must be tight to prevent wires from loosening during machine operation. Double-check all wires disconnected or connected during any wiring task to ensure tight connections.

**CIRCUIT REQUIREMENTS.** You MUST follow the requirements at the beginning of this manual when connecting your machine to a power source.

**WIRE/COMPONENT DAMAGE.** Damaged wires or components increase the risk of serious personal injury, fire, or machine damage. If you notice that any wires or components are damaged while performing a wiring task, replace those wires or components.

**MOTOR WIRING.** The motor wiring shown in these diagrams is current at the time of printing but may not match your machine. If you find this to be the case, use the wiring diagram inside the motor junction box.















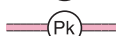
**CAPACITORS/INVERTERS.** Some capacitors and power inverters store an electrical charge for up to 10 minutes after being disconnected from the power source. To reduce the risk of being shocked, wait at least this long before working on capacitors.

**EXPERIENCING DIFFICULTIES.** If you are experiencing difficulties understanding the information included in this section, contact our Technical Support at (570) 546-9663.

#### NOTICE

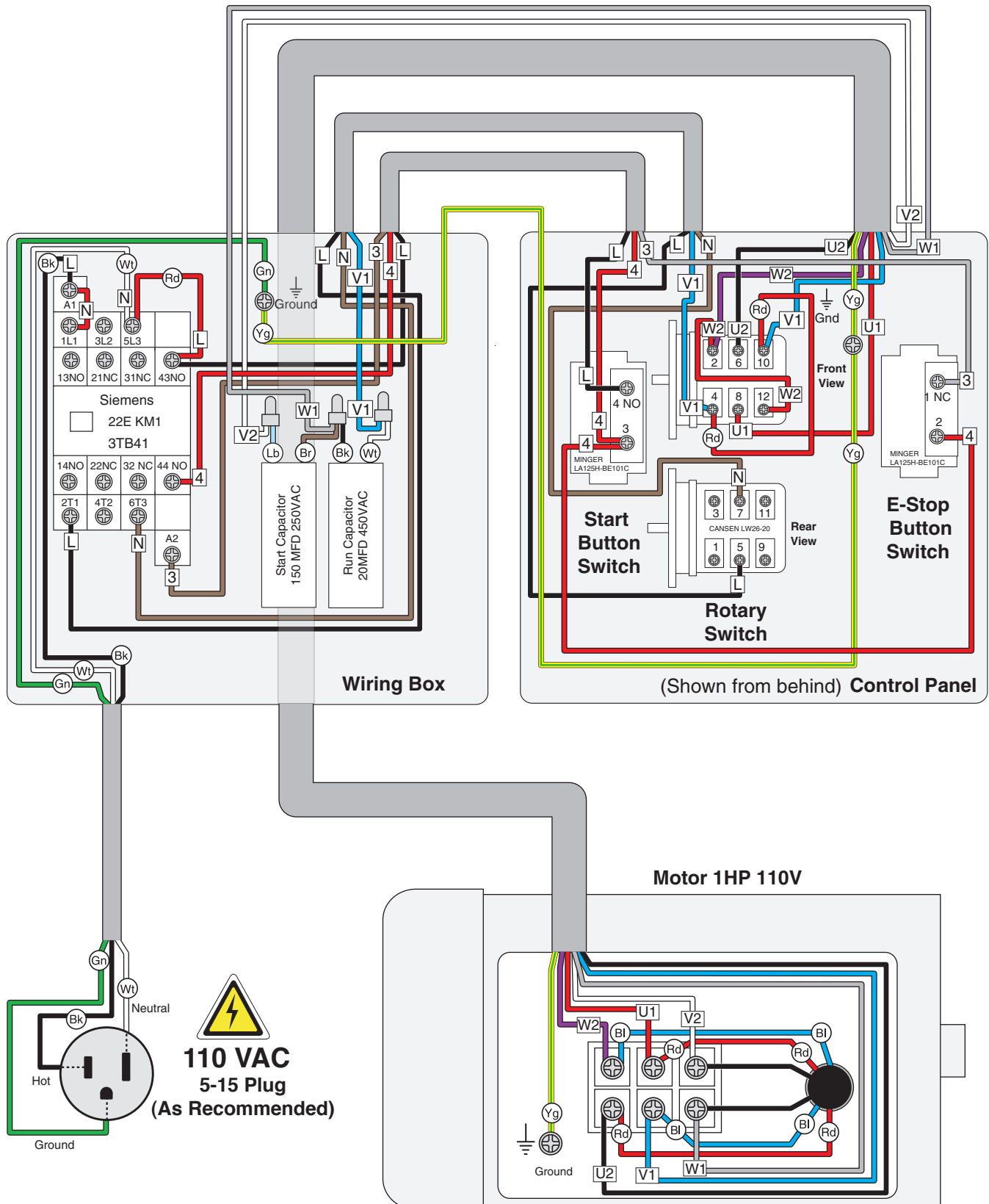
The photos and diagrams included in this section are best viewed in color. You can view these pages in color at [www.grizzly.com](http://www.grizzly.com).

#### COLOR KEY

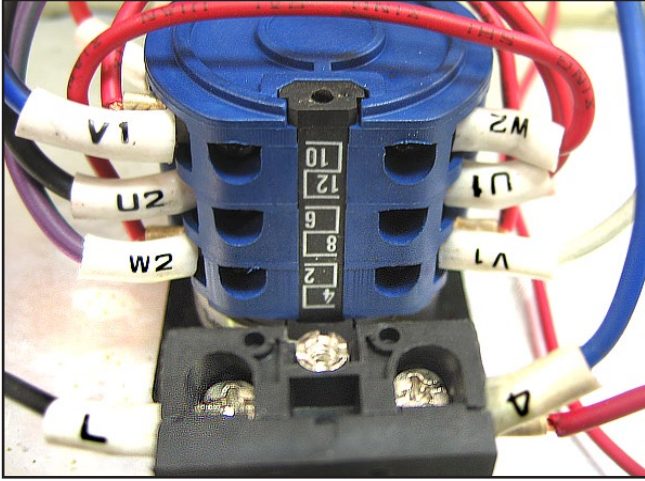
BLACK		BLUE		YELLOW		LIGHT BLUE	
WHITE		BROWN		YELLOW GREEN		BLUE WHITE	
GREEN		GRAY		PURPLE		TURQUOISE	
RED		ORANGE		PINK			



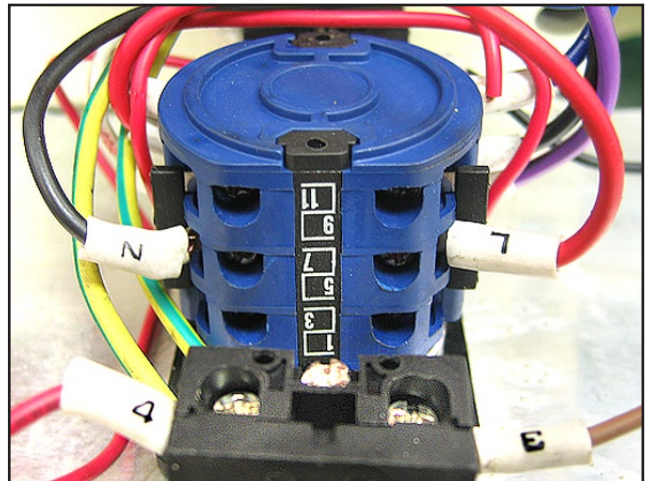
# G0602 Wiring Diagram



# G0602 Electrical Components



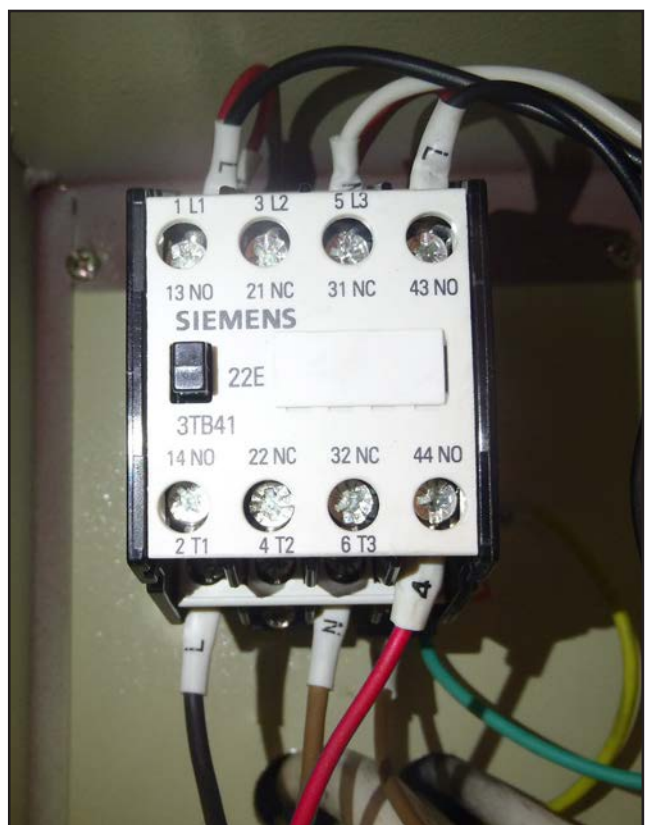
**Figure 101.** Spindle direction switch and ON button.



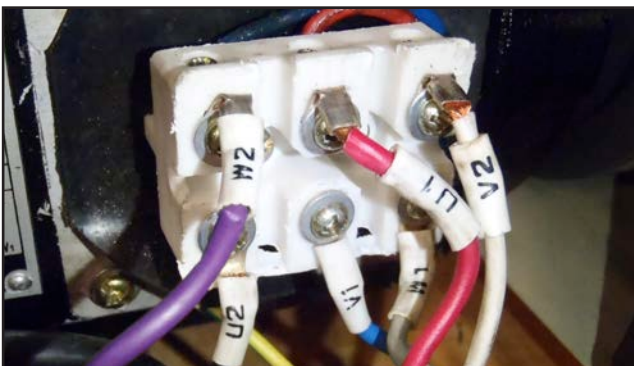
**Figure 104.** Spindle direction switch and emergency stop switch.



**Figure 102.** Electrical box.

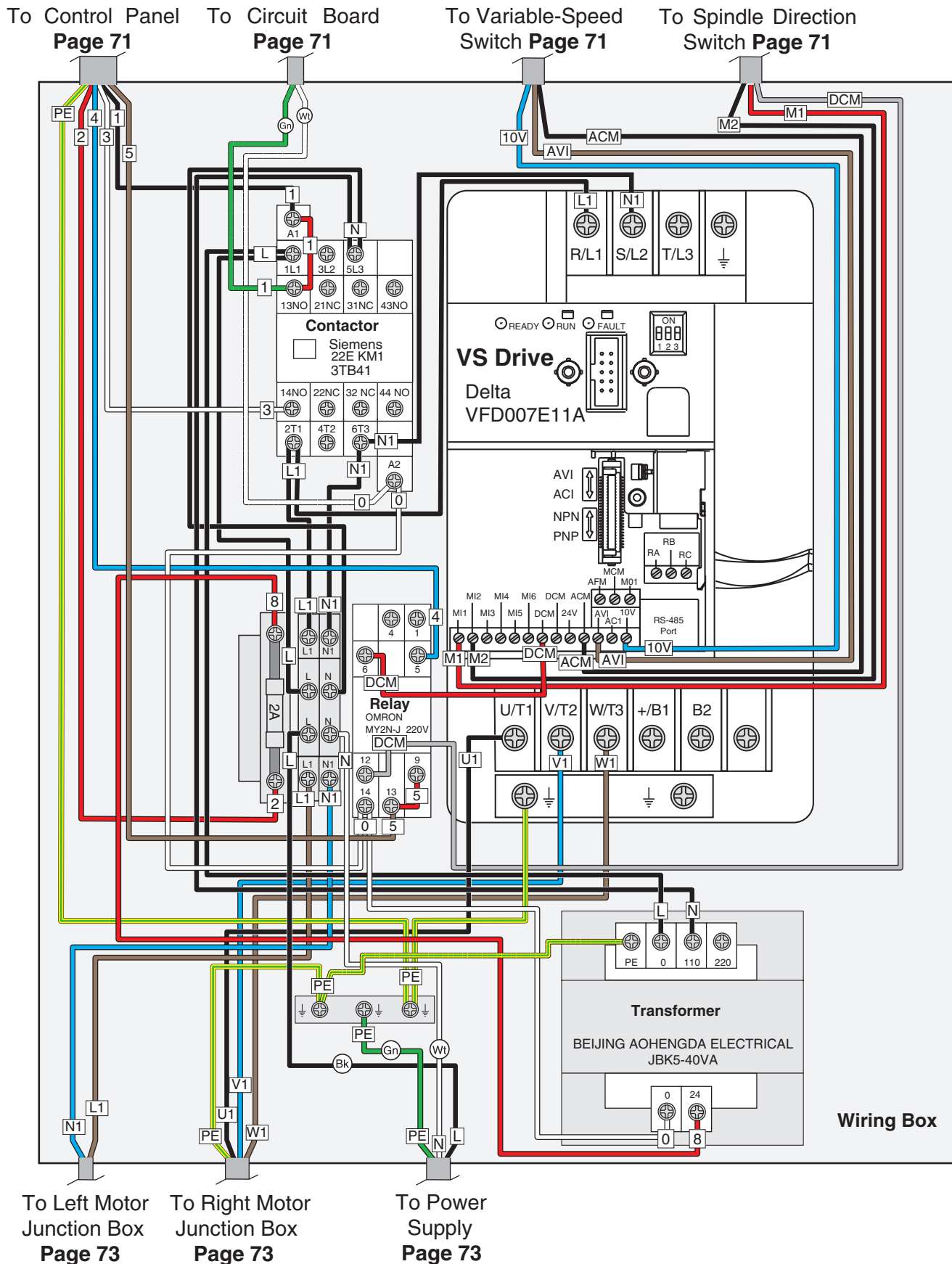


**Figure 105.** Magnetic contactor.



**Figure 103.** Motor connection detail.

# G0752 Wiring Box Diagram





# G0752 Wiring Box Components

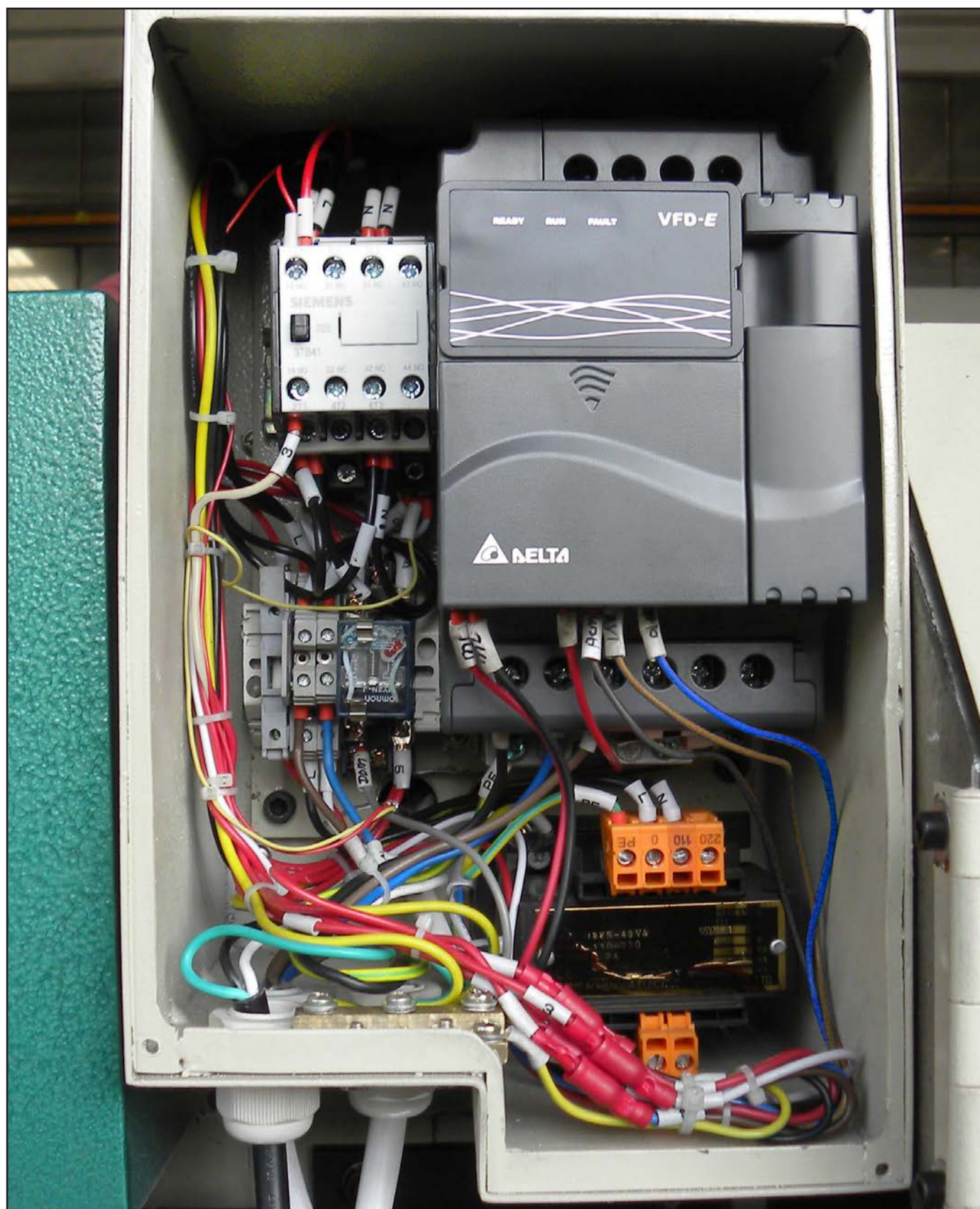
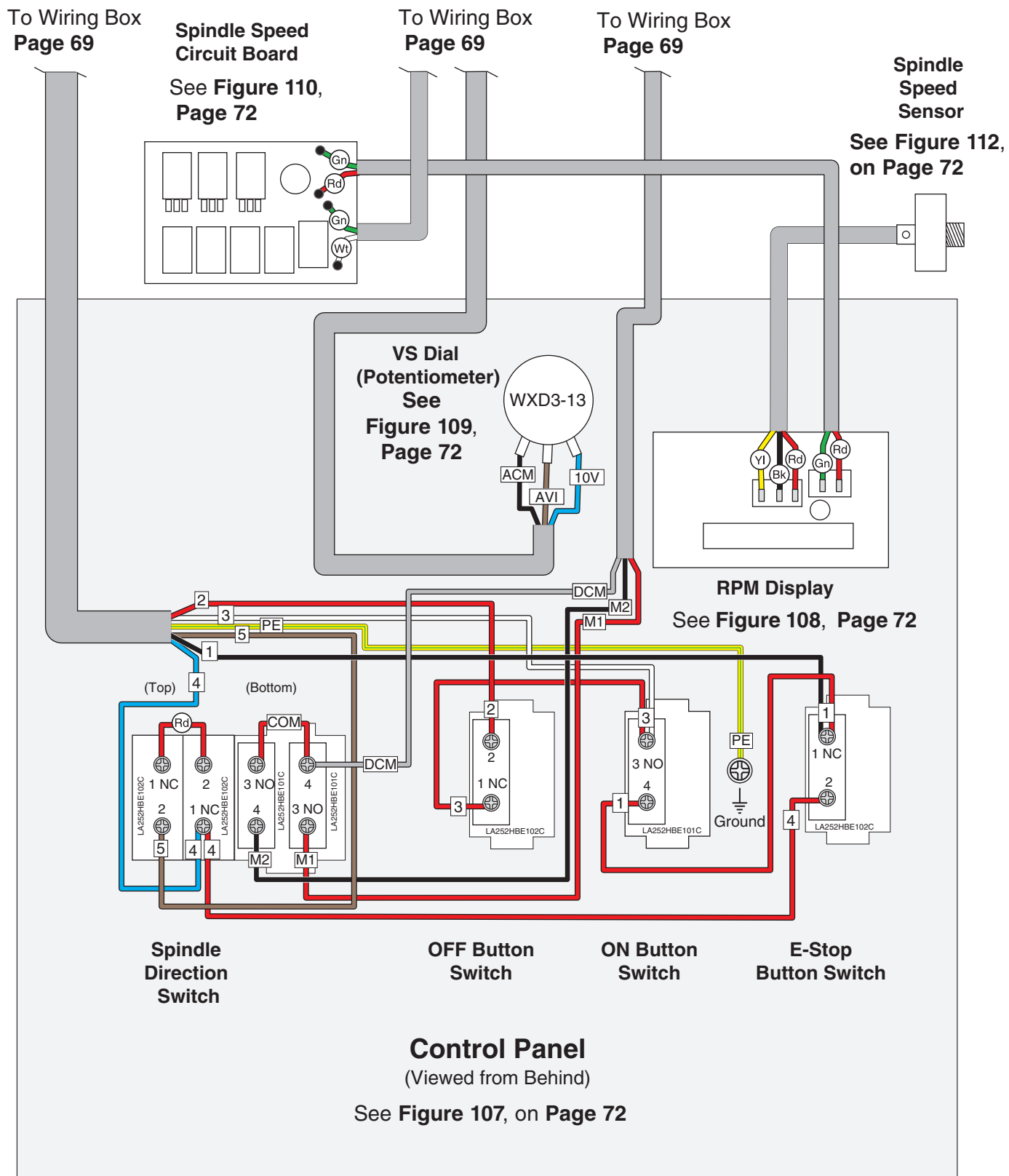


Figure 106. G0752 electrical box.





# G0752 Control Panel Wiring Diagram



# G0752 Control Panel Components

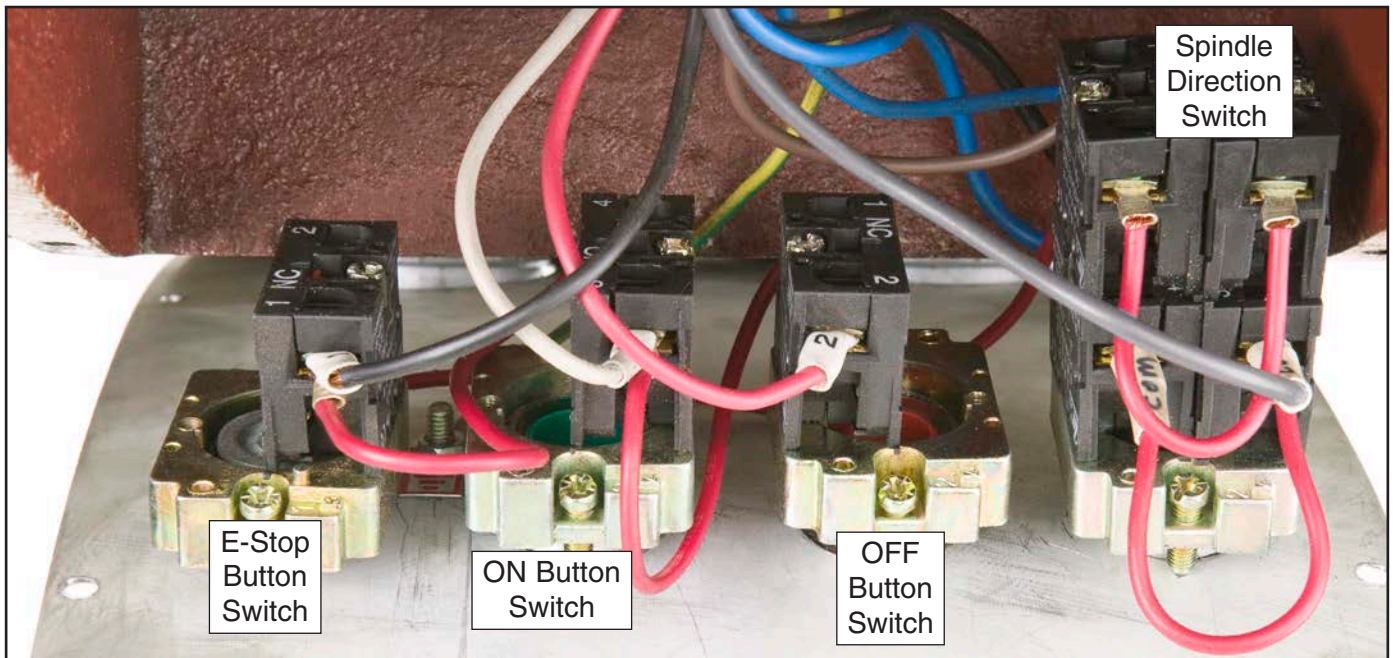


Figure 107. Control panel.



Figure 108. RPM display.

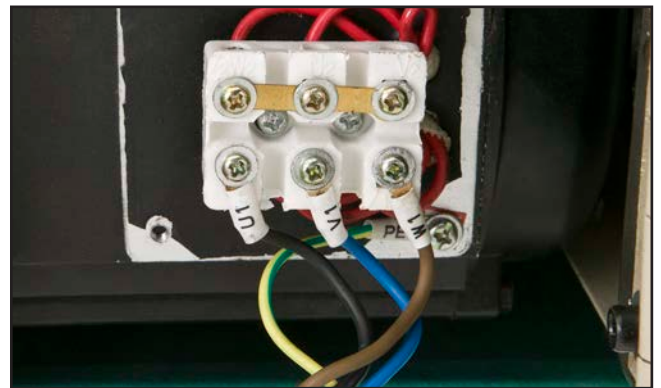


Figure 111. Right junction box.



Figure 109. Variable-speed dial.



Figure 112. Spindle speed sensor.

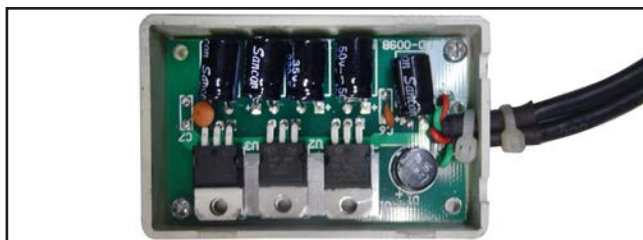
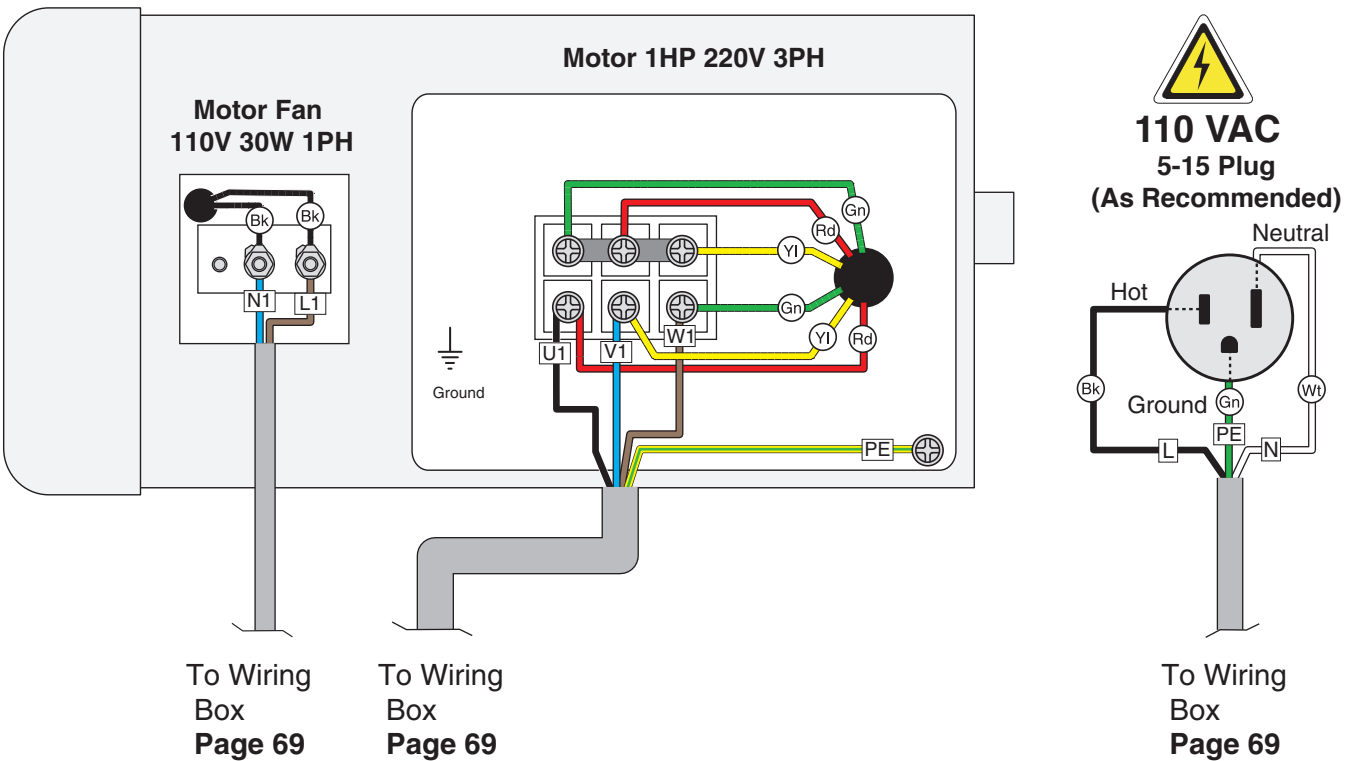
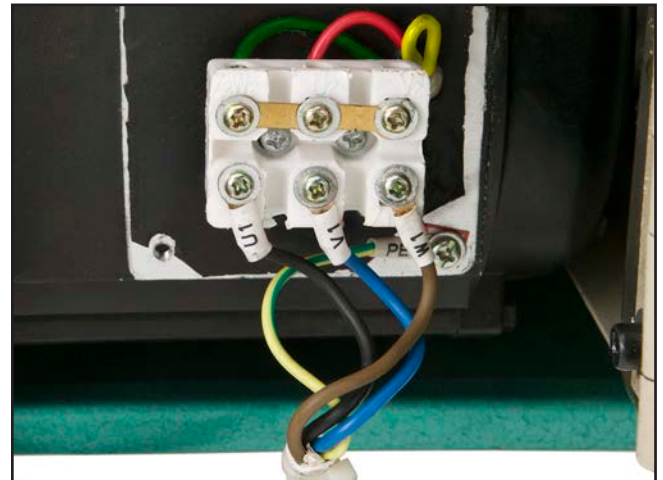


Figure 110. Spindle speed circuit board.



**Figure 113.** Left motor junction box.



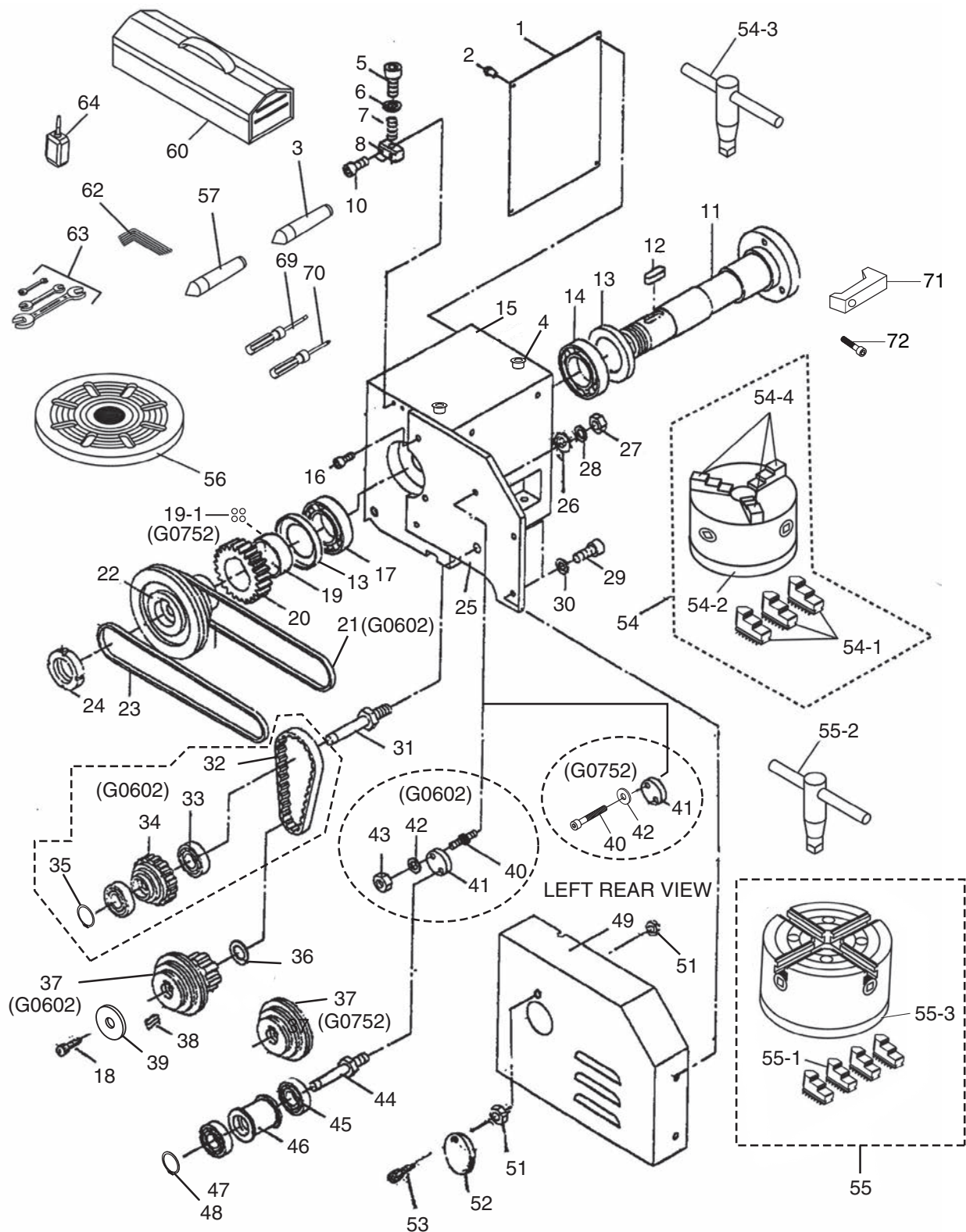
**Figure 114.** Right motor junction box.





# SECTION 9: PARTS

## Spindle & Drive Belt



# Spindle & Drive Belt Parts

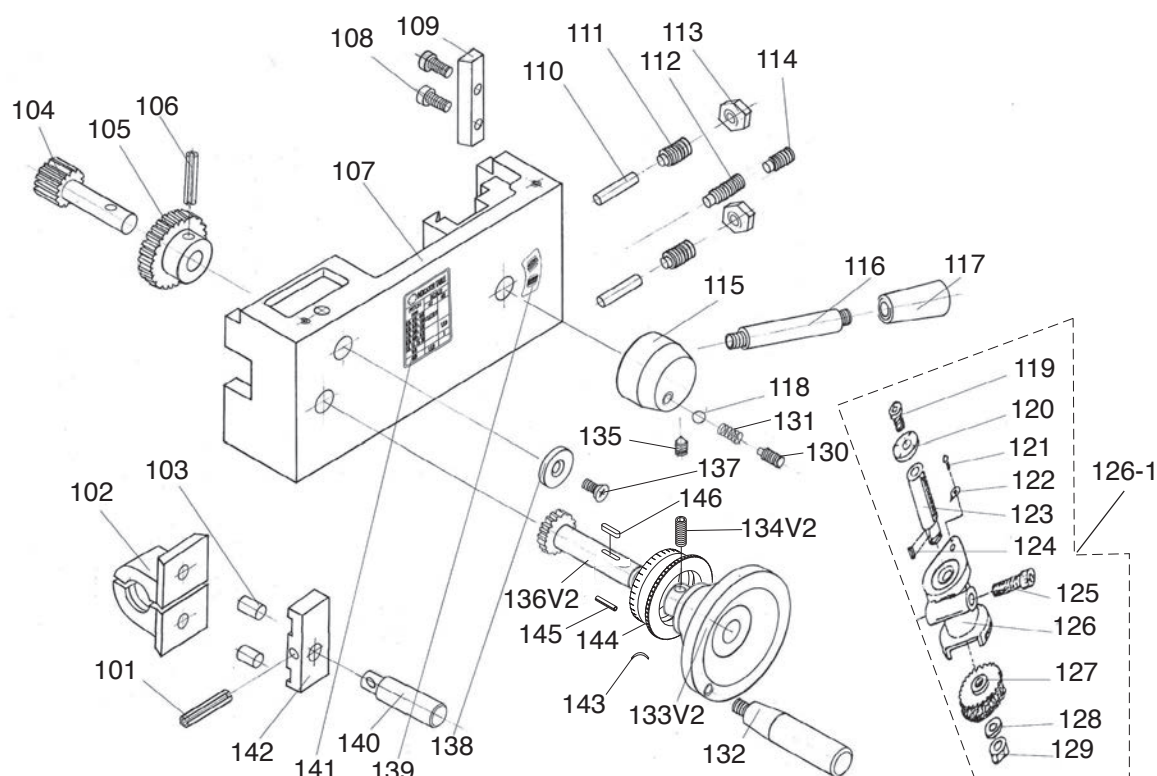
REF	PART #	DESCRIPTION	REF	PART #	DESCRIPTION
1	P0602001	HEADSTOCK REAR COVER	37	P0602037	PULLEY A (G0602)
2	P0602002	PHLP HD SCR M4-.7 X 6	37	P0752037	MOTOR PULLEY (G0752)
3	P0602003	DEAD CENTER MT#4	38	P0602038	KEY 6 X 6 X 40
4	P0602004	BALL OILER 7MM PRESS-IN	39	P0602039	SPACER
5	P0602005	CAP SCREW M6-1 X 25	40	P0602040	STANDOFF STUD M10-1.5 X 50, 15, 25 (G0602)
6	P0602006	FLAT WASHER 6MM	40	P0752040	CAP SCREW M10-1.5 X 20 (G0752)
7	P0602007	COMPRESSION SPRING	41	P0602041	MOUNTING PLATE
8	P0602008	CLAMP	42	P0602042	FLAT WASHER 10MM
10	P0602010	CAP SCREW M6-1 X 25	43	P0602043	HEX NUT M10-1.5 (G0602)
11	P0602011	SPINDLE	44	P0602044	TENSIONER ROLLER SHAFT
12	P0602012	KEY 10 X 10 X 55	45	P0602045	BALL BEARING 6001-2RS
13	P0602013	SPACER	46	P0602046	TENSIONER ROLLER
14	P0602014	TAPERED ROLLER BEARING 32009	48	P0602048	EXT RETAINING RING 12MM
15	P0602015	HEADSTOCK	49	P0602049	CHANGE GEAR COVER
16	P0602016	CAP SCREW M8-1.25 X 20	51	P0602051	HEX NUT M5-.8
17	P0602017	TAPERED ROLLER BEARING 32009	52	P0602052	SPINDLE COVER
18	P0602018	CAP SCREW M6-1 X 20	53	P0602053	PHLP HD SCR M5-.8 X 12
19	P0602019	SPACER	54	P0602054	3-JAW CHUCK 5"
19	P0752019	SPEED SENSOR RING W/MAGNETS	54-1	P0602054-1	3-JAW CHUCK JAW INT 3-PC SET
20	P0602020	GEAR 40T PLASTIC	54-2	P0602054-2	CHUCK BACKPLATE
21	P0602021	V-BELT M-27.5 3L275 (G0602)	54-3	P0602054-3	3-JAW CHUCK KEY
22	P0602022	PULLEY C	54-4	P0602054-4	3-JAW CHUCK JAW EXT 3-PC SET
23	P0602023	V-BELT M-33 3L330	55	P0602055	4-JAW CHUCK 6.5"
24	P0602024	SPANNER NUT 37MM	55-1	P0602055-1	4-JAW CHUCK JAWS 4-PC SET
25	P0602025	BRACKET PLATE	55-2	P0602055-2	4-JAW CHUCK KEY
26	P0602026	LOCK WASHER 10MM	55-3	P0602055-3	4-JAW CHUCK BACKPLATE
27	P0602027	HEX NUT M10-1.5	56	P0602056	FACEPLATE 8"
28	P0602028	FLAT WASHER 10MM	57	P0602057	DEAD CENTER MT#3
29	P0602029	CAP SCREW M5-.8 X 10	60	P0602060	TOOL BOX, EMPTY
30	P0602030	FLAT WASHER 5MM	62	P0602062	HEX WRENCH SET (2.5,3,4,5,6MM)
31	P0602031	GEAR SHAFT	63	P0602063	WRENCH SET (8-10, 12-14, 17-19MM)
32	P0602032	TIMING BELT 263L (G0602)	64	P0602064	BOTTLE FOR OIL
33	P0602033	BALL BEARING 6001ZZ (G0602)	69	P0602069	STANDARD SCREWDRIVER #1
34	P0602034	TIMING PULLEY (G0602)	70	P0602070	PHILLIPS SCREWDRIVER #1
35	P0602035	INT RETAINING RING 12MM (G0602)	71	P0602071	SPINDLE CLAMP
36	P0602036	SPACER	72	P0602072	CAP SCREW M6-1 X 20

**Please Note:** We do our best to stock replacement parts whenever possible, but we cannot guarantee that all parts shown here are available for purchase. Call **(800) 523-4777** or visit our online parts store at **[www.grizzly.com](http://www.grizzly.com)** to check for availability.





# Apron



## REF PART # DESCRIPTION

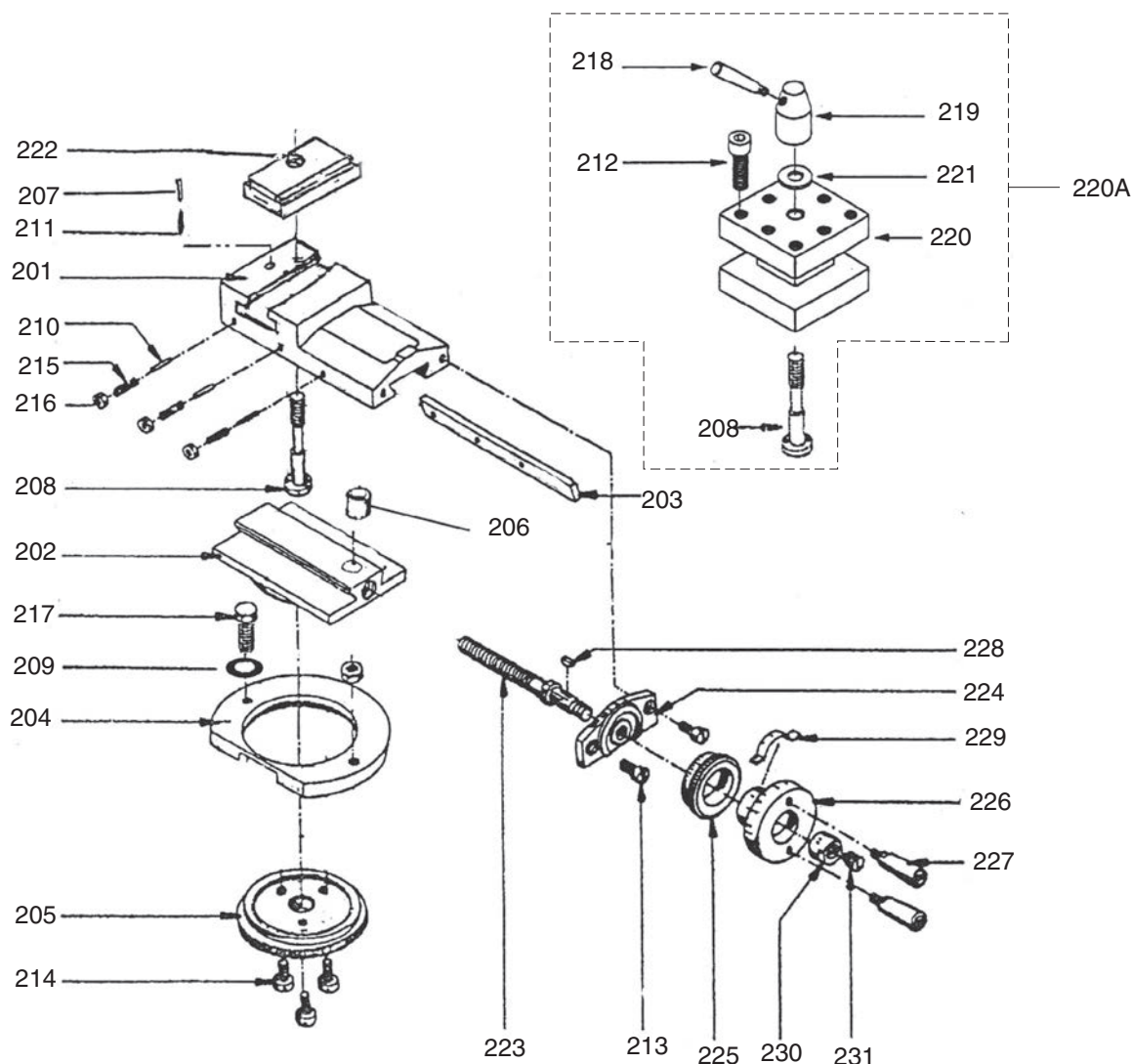
101	P0602101	ROLL PIN 4 X 14
102	P0602102	HALF-NUT 2-PC
103	P0602103	DOWEL PIN 5 X 12
104	P0602104	GEAR SHAFT
105	P0602105	GEAR
106	P0602106	ROLL PIN 4 X 30
107	P0602107	APRON CASTING
108	P0602108	CAP SCREW M4-.7 X 12
109	P0602109	HALF-NUT GIB
110	P0602110	DOWEL PIN 4 X 16
111	P0602111	SET SCREW M5-.8 X 16
112	P0602112	SET SCREW M6-1 X 25
113	P0602113	HEX NUT M5-.8
114	P0602114	SET SCREW M6-1 X 12
115	P0602115	HALF-NUT LEVER HUB
116	P0602116	HALF-NUT LEVER STUD
117	P0602117	HALF-NUT LEVER HANDLE
118	P0602118	STEEL BALL 5MM
119	P0602119	CAP SCREW M6-1 X 6
120	P0602120	THREAD DIAL
121	P0602121	RIVET 2 X 5MM STEEL FLUTED
122	P0602122	POINTER
123	P0602123	SHAFT

## REF PART # DESCRIPTION

124	P0602124	KEY 3 X 3 X 10
125	P0602125	CAP SCREW M6-1 X 55
126	P0602126	THREAD DIAL BODY
126-1	P0602126-1	THREAD DIAL ASSY
127	P0602127	SIDE GEAR 48T
128	P0602128	FLAT WASHER 8MM
129	P0602129	HEX NUT M8-1.25
130	P0602130	SET SCREW M6-1 X 6
131	P0602131	COMPRESSION SPRING
132	P0602132	CARRIAGE HANDWHEEL HANDLE
133V2	P0602133V2	CARRIAGE HANDWHEEL
134V2	P0602134V2	SET SCREW M6-1 X 12
135	P0602135	SET SCREW M6-1 X 12 CONE-PT
136V2	P0602136V2	GEAR SHAFT V2.03.17
137	P0602137	FLAT HD SCR M6-1 X 10
138	P0602138	FLAT WASHER 6MM
139	P0602139	HALF-NUT INDICATOR PLATE
140	P0602140	LOCK CAM SHAFT
141	P0602141	THREADED DIAL PLATE
142	P0602142	HALF-NUT BRACKET
143	P0602143	PLATE SPRING
144	P0602144	GRADUATED DIAL
145	P0602145	ROLL PIN 5 X 12
146	P0602146	KEY 3 X 3 X 12



# Tool Post & Compound Rest

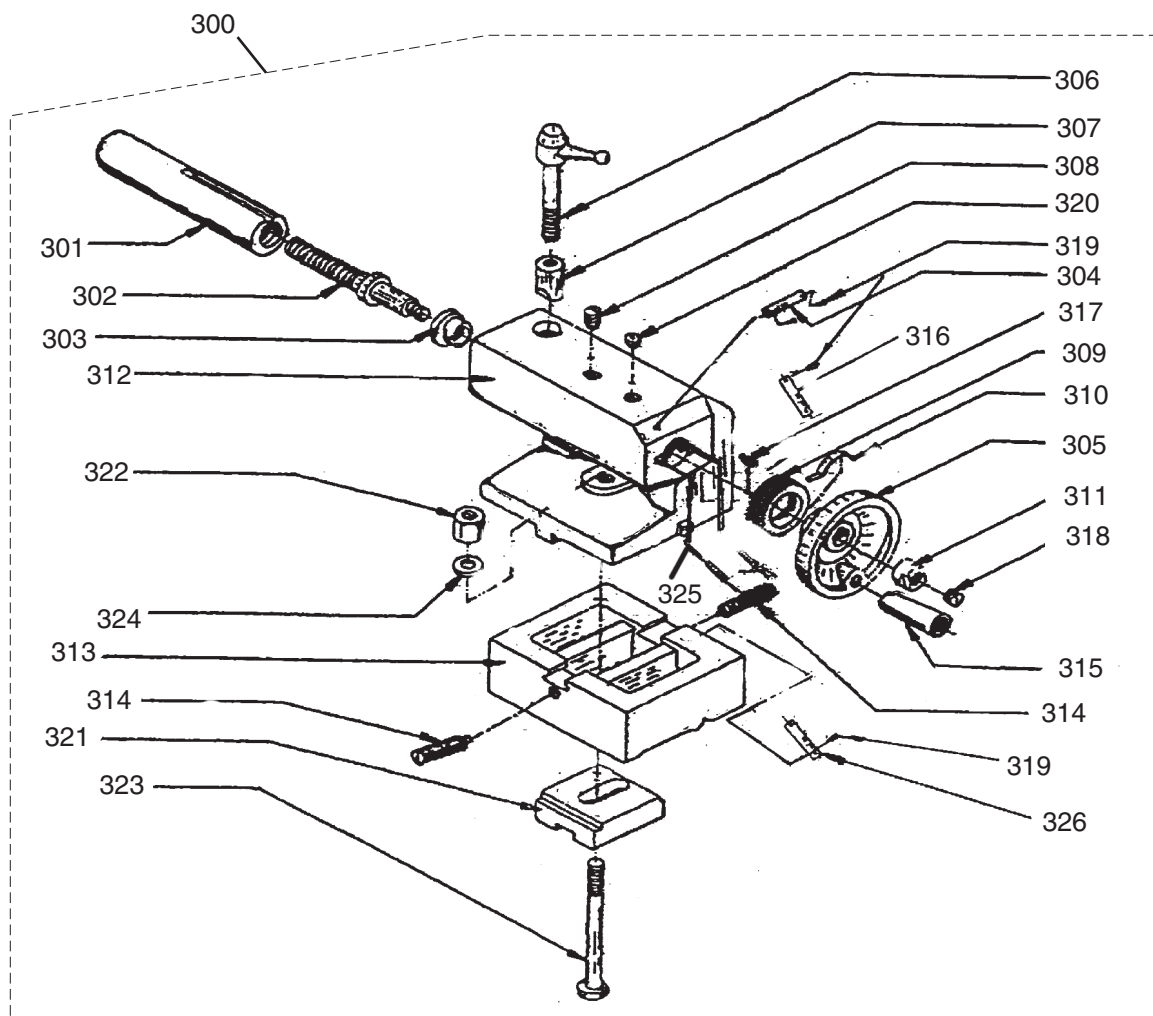


REF	PART #	DESCRIPTION
201	P0602201	COMPOUND REST
202	P0602202	SWIVEL BASE
203	P0602203	COMPOUND REST GIB
204	P0602204	CLAMPING RING
205	P0602205	GRADUATED DIAL
206	P0602206	BARREL NUT
207	P0602207	DOWEL PIN
208	P0602208	TOOL POST BOLT
209	PW01M	FLAT WASHER 8MM
210	P0602210	DOWEL PIN
211	P0602211	COMPRESSION SPRING
212	PCAP13M	CAP SCREW M8-1.25 X 30
213	PCAP31M	CAP SCREW M8-1.25 X 25
214	PCAP26M	CAP SCREW M6-1 X 12
215	PSS34M	SET SCREW M5-.8 X 16
216	PN06M	HEX NUT M5-.8

REF	PART #	DESCRIPTION
217	PB26M	HEX BOLT M8-1.25 X 30
218	P0602218	TOOL POST HANDLE
219	P0602219	TOOL POST HANDLE HUB
220A	P0602220A	4-WAY TOOL POST ASSEMBLY
220	P0602220	TOOL REST
221	P0602221	HUB SPACER
222	P0602222	TOOL REST SLIDE PLATE
223	P0602223	COMPOUND REST LEADSCREW
224	P0602224	LEADSCREW MOUNT
225	P0602225	GRADUATED DIAL
226	P0602226	COMPOUND REST HANDWHEEL
227	P0602227	COMPOUND HANDWHEEL HANDLE
228	PK03M	KEY 3 X 3 X 8
229	P0602229	POINTER
230	P0602230	THREADED COLLAR
231	PSS17M	SET SCREW M8-1.25 X 6



# Tailstock

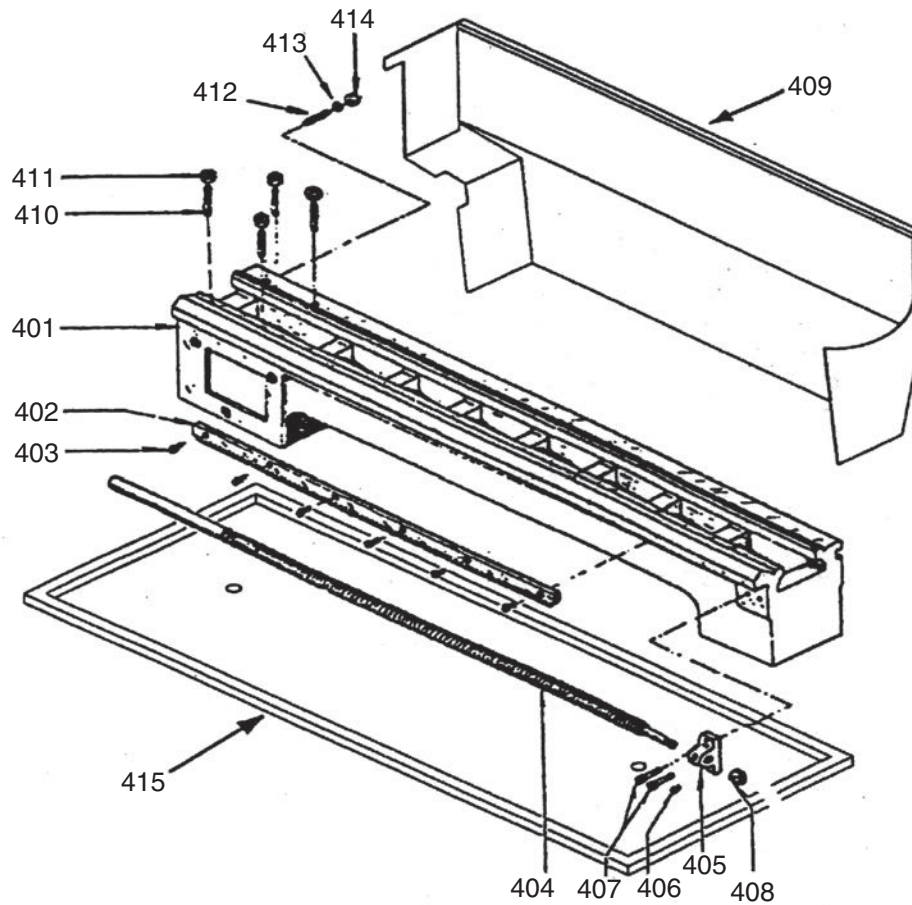


REF	PART #	DESCRIPTION
300	P0602300	COMPLETE TAILSTOCK ASSY
301	P0602301	TAILSTOCK QUILL
302	P0602302	TAILSTOCK LEADSCREW
303	P0602303	BUSHING
304	P0602304	HANDWHEEL SCALE PLATE
305	P0602305	TAILSTOCK HANDWHEEL
306	P0602306	LEVER BOLT M12-1.75 X 50
307	P0602307	BARREL NUT M12-1.75
308	PSS04M	SET SCREW M6-1 X 12
309	P0602309	GRADUATED DIAL
310	P0602310	TAILSTOCK HANDWHEEL POINTER
311	P0602311	HANDWHEEL BUSHING
312	P0602312	TAILSTOCK BODY
313	P0602313	TAILSTOCK BASE

REF	PART #	DESCRIPTION
314	PSS21M	SET SCREW M8-1.25 X 25
315	P0602315	TAILSTOCK HANDWHEEL HANDLE
316	P0602316	UPPER OFFSET PLATE
317	PK39M	KEY 3 X 3 X 10
318	PLN05M	LOCK NUT M10-1.5
319	PRIV001M	RIVET 2 X 5MM STEEL FLUTED
320	P0602320	BALL OILER 10MM
321	P0602321	CLAMPING PLATE
322	PN09M	HEX NUT M12-1.75
323	PB158M	HEX BOLT M12-1.75 X 90
324	PW06M	FLAT WASHER 12MM
325	PSS26M	SET SCREW M5-.8 X 6
326	P0602326	LOWER OFFSET PLATE



# Bed & Leadscrew

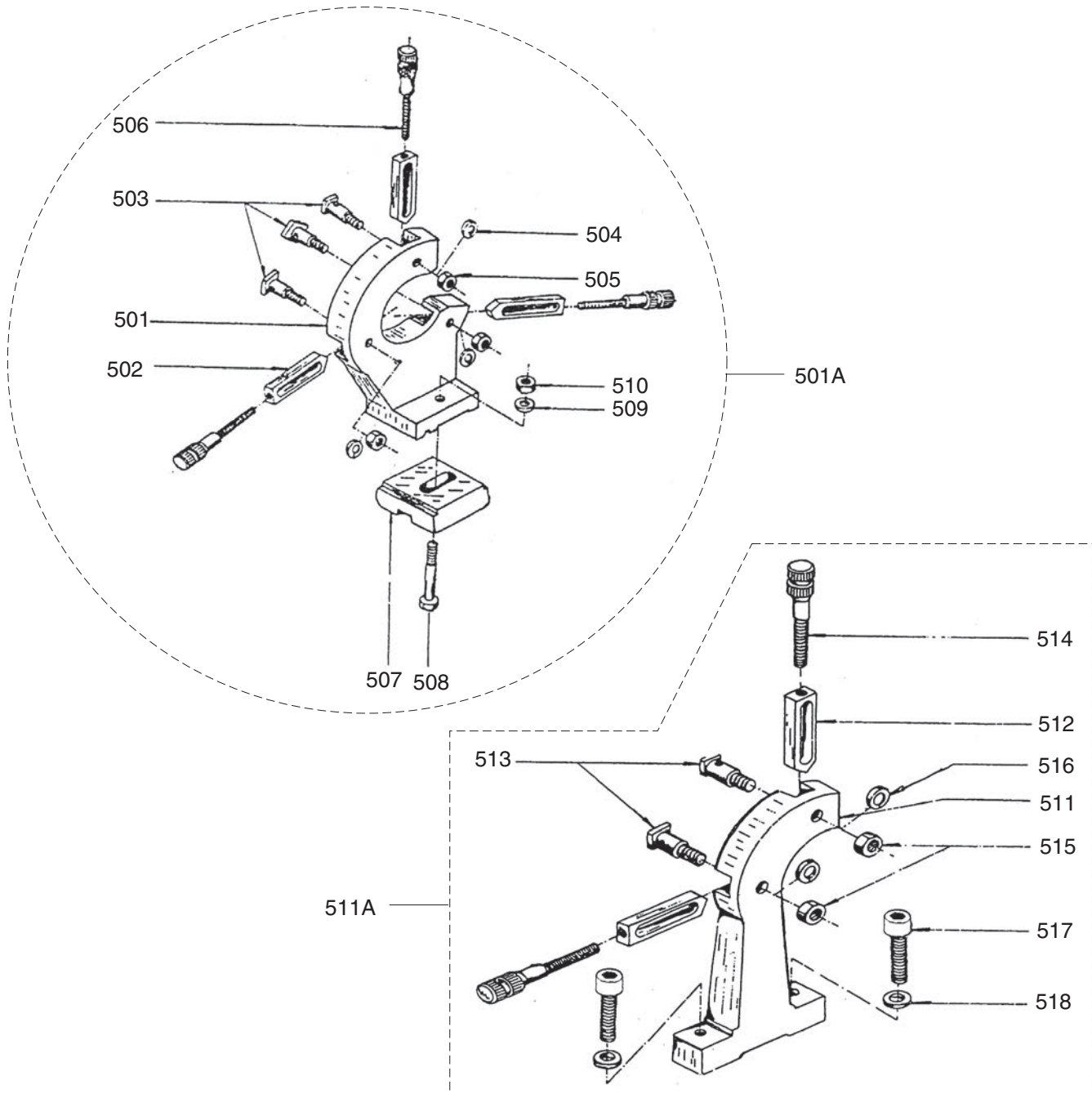


REF	PART #	DESCRIPTION
401	P0602401	BED
402	P0602402	RACK
403	PCAP33M	CAP SCREW M5-.8 X 12
404	P0602404	LONGITUDINAL LEADSCREW
405	P0602405	LEADSCREW END BRACKET
406	P0602406	BALL OILER 6MM
407	PCAP02M	CAP SCREW M6-1 X 20
408	PLN05M	LOCK NUT M10-1.5

REF	PART #	DESCRIPTION
409	P0602409	BACK SPLASH
410	P0602410	STUD-SE M10-1.5 X 45, 35
411	PN02M	HEX NUT M10-1.5
412	PSS44M	SET SCREW M8-1.25 X 40
413	PW01M	FLAT WASHER 8MM
414	PN03M	HEX NUT M8-1.25
415	P0602415	CHIP PAN



# Steady Rest & Follow Rest



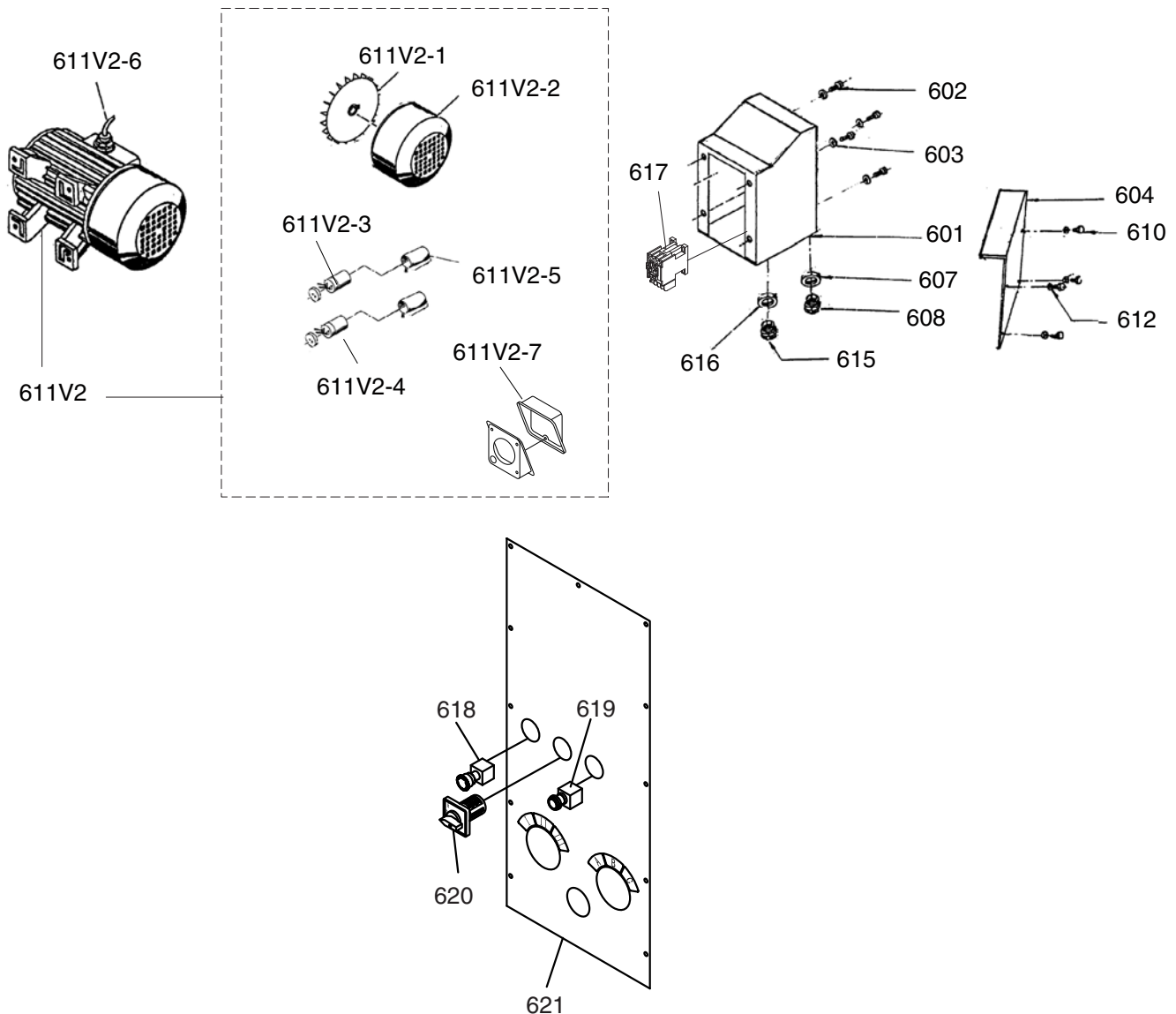
REF	PART #	DESCRIPTION
501A	P0602501A	STEADY REST ASSEMBLY
501	P0602501	STEADY REST CASTING
502	P0602502	FINGER
503	P0602503	SHOULDER T-BOLT
504	PLW03M	LOCK WASHER 6MM
505	PN01M	HEX NUT M6-1
506	P0602506	ADJUSTING SCREW
507	P0602507	CLAMPING PLATE
508	PB125M	HEX BOLT M12-1.75 X 65
509	PW06M	FLAT WASHER 12MM

REF	PART #	DESCRIPTION
510	PN09M	HEX NUT M12-1.75
511A	P0602511A	FOLLOW REST ASSEMBLY
511	P0602511	FOLLOW REST CASTING
512	P0602502	FINGER
513	P0602503	SHOULDER T-BOLT
514	P0602506	ADJUSTING SCREW
515	PN01M	HEX NUT M6-1
516	PLW03M	LOCK WASHER 6MM
517	PCAP40M	CAP SCREW M8-1.25 X 35
518	PW01M	FLAT WASHER 8MM





# G0602 Motor & Electrical

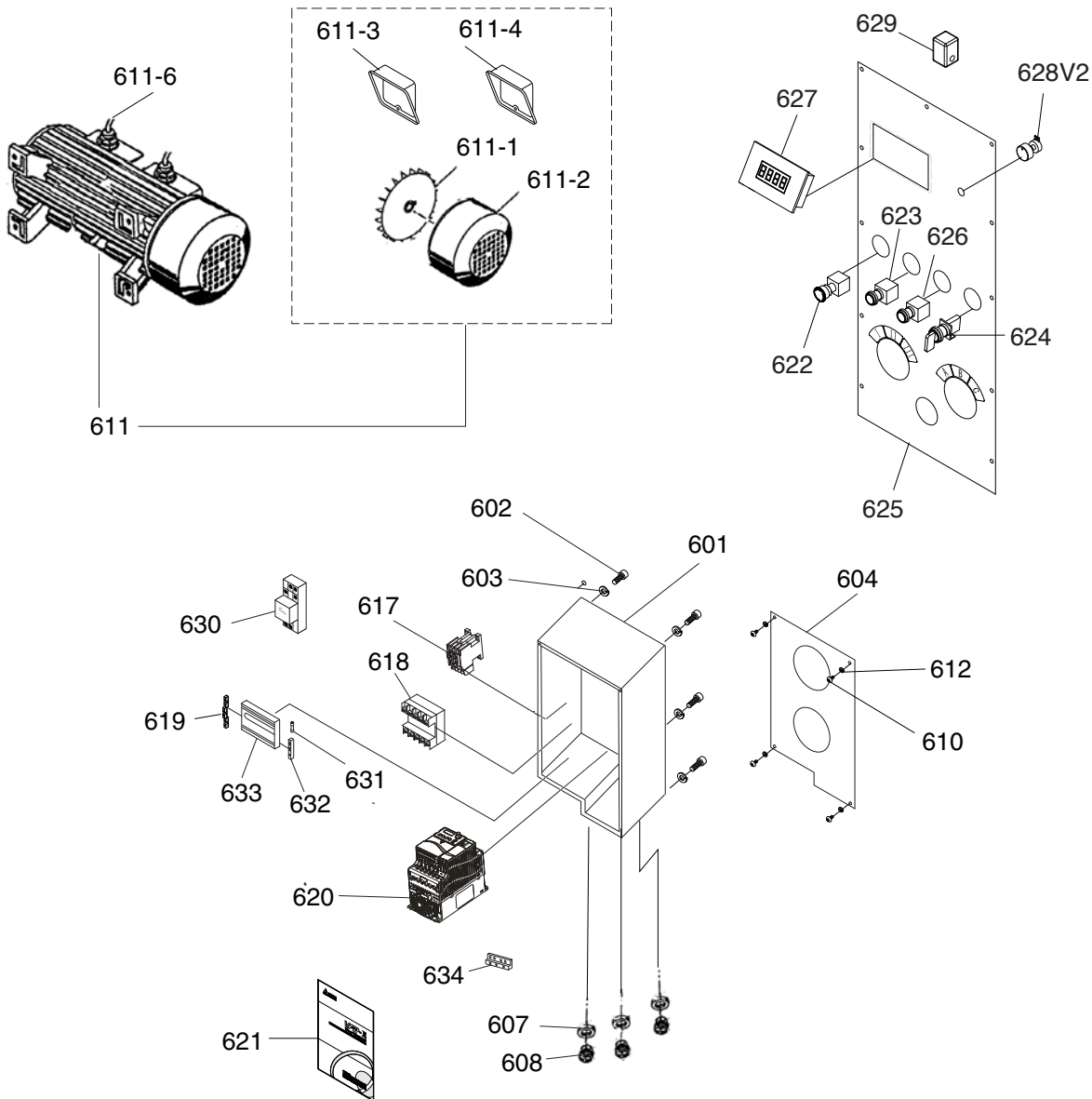


REF	PART #	DESCRIPTION
601	P0602601	ELECTRICAL CABINET
602	PCAP06M	CAP SCREW M6-1 X 25
603	PLW03M	LOCK WASHER 6MM
604	P0602604	ELECTRICAL CABINET COVER
607	P0602607	STRAIN RELIEF NUT
608	P0602608	STRAIN RELIEF M25-1.5
610	PS17M	PHLP HD SCR M4-.7 X 6
611V2	P0602611V2	MOTOR 1HP 110V 1-PH ALUM BDY V2.09.08
611V2-1	P0602611V2-1	MOTOR FAN V2.09.08
611V2-2	P0602611V2-2	MOTOR FAN COVER V2.09.08
611V2-3	PC150	S CAPACITOR 150M 125V
611V2-4	P0602611V2-4	R CAPACITOR 20M 400V

REF	PART #	DESCRIPTION
611V2-5	P0602611V2-5	CAPACITOR COVER V2.09.08
611V2-6	P0602611V2-6	POWER CORD 14G 3W 60" 5-15P
611V2-7	P0602611V2-7	MOTOR JUNCTION BOX
612	PW05M	FLAT WASHER 4MM
615	P0602615	STRAIN RELIEF M20-1.5
616	P0602616	STRAIN RELIEF NUT
617	P0602617	CONTACTOR SIEMENS 3TB41 22E 110V
618	P0602618	E-STOP BUTTON MINGER LA125H-BE102C
619	P0602619	ON PUSH BUTTON MINGER LA125H-BE101C
620	P0602620	ROTARY SWITCH CANSEN LW26-20 M09T/3
621	P0602621	G0602 CONTROL PANEL



# G0752 Motor & Electrical

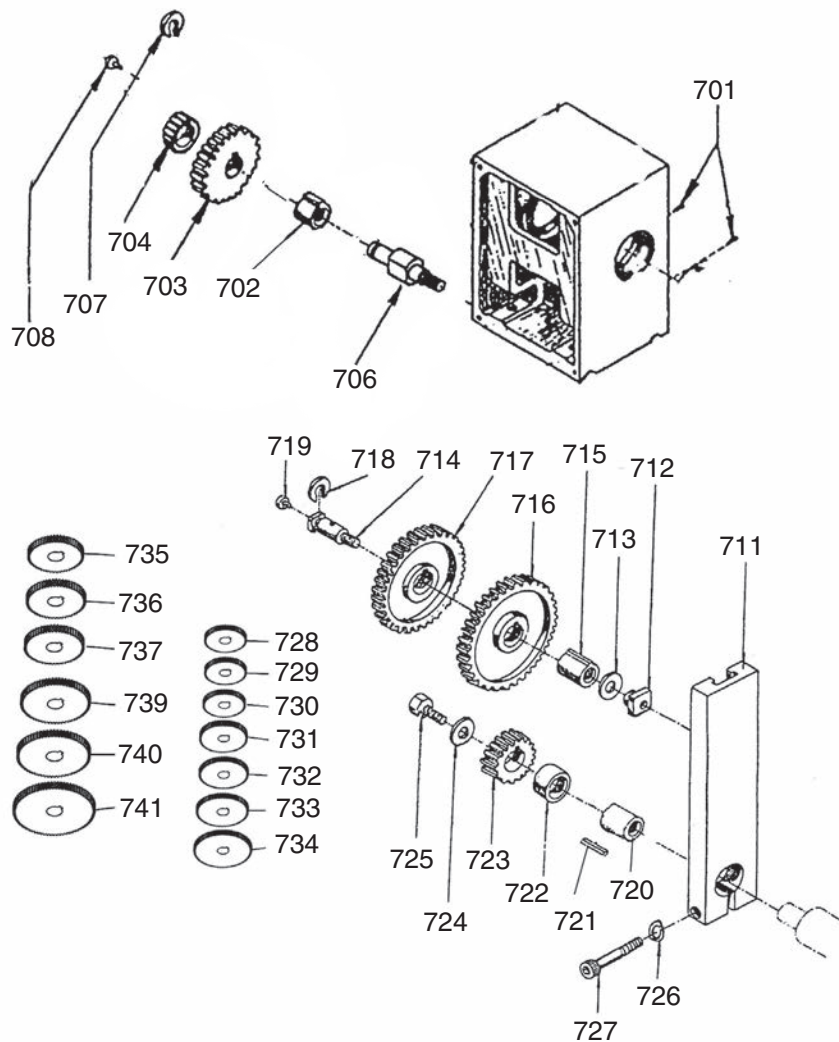


REF	PART #	DESCRIPTION
601	P0752601	ELECTRICAL CABINET
602	P0752602	CAP SCREW M6-1 X 25
603	P0752603	LOCK WASHER 6MM
604	P0752604	ELECTRICAL CABINET COVER
607	P0752607	STRAIN RELIEF NUT
608	P0752608	STRAIN RELIEF M25-1.5
610	P0752610	PHLP HD SCR M4-.7 X 6
611	P0752611	MOTOR 1HP 220V 3-PH
611-1	P0752611-1	MOTOR FAN
611-2	P0752611-2	MOTOR FAN COVER
611-3	P0752611-3	RIGHT MOTOR JUNCTION BOX COVER
611-4	P0752611-4	LEFT MOTOR JUNCTION BOX COVER
611-6	P0752611-6	POWER CORD 16G 3W 60" 5-15P
612	P0752612	FLAT WASHER 4MM
617	P0752617	CONTACTOR SIEMENS 3TB41 22E 24V
618	P0752618	TRANSFORMER BAECC JBK5-40VA
619	P0752619	TERMINAL POST

REF	PART #	DESCRIPTION
620	P0752620	INVERTER (VFD) DELTA VFD007E11A
621	P0752621	VFD-E USER MANUAL
622	P0752622	E-STOP BUTTON MINGER LA125H-BE101C-102C
623	P0752623	ON PUSH BUTTON MINGER LA125H-BE102C
624	P0752624	SPINDLE DIRECTION SWITCH LA125H-BE102C
625	P0752625	G0752 CONTROL PANEL
625	P0752625	G0752 CONTROL PANEL
626	P0752626	OFF PUSH BUTTON MINGER LA125H-BE101C
627	P0752627	RPM DISPLAY UNIT
628V2	P0752628V2	POTENTIOMETER WXD3-13 V2.03.17
629	P0752629	SPINDLE SPEED SENSOR
630	P0752630	RELAY OMRON MY2N-J 220V
631	P0752631	FUSE 2A 250V
632	P0752632	FUSE HOLDER
633	P0752633	TERMINAL POST MOUNTING BRACKET
634	P0752634	GROUNDING BAR



# Change Gears

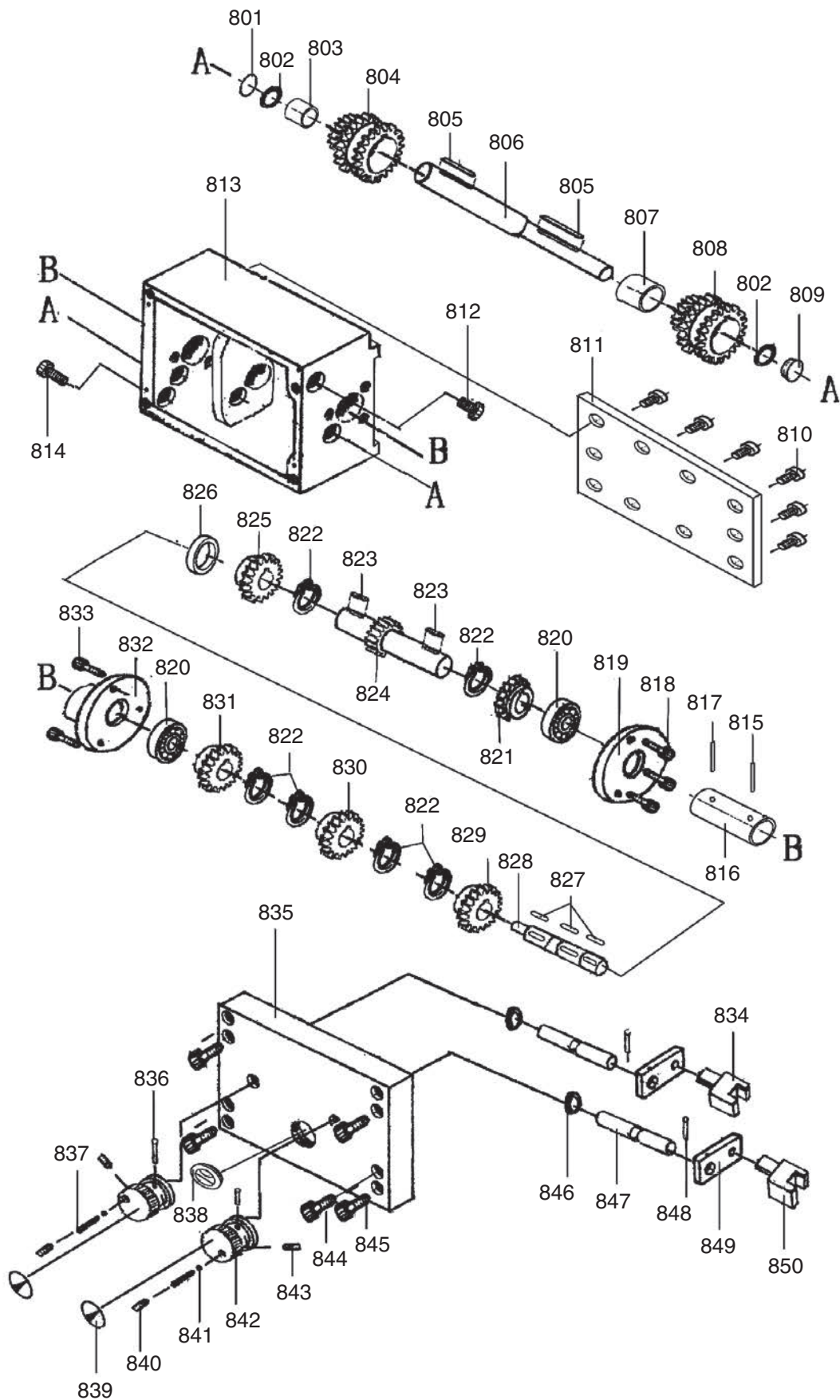


REF	PART #	DESCRIPTION
701	PSS01M	SET SCREW M6-1 X 10
702	P0602715	KEYED BUSHING
703	P0602703	GEAR 60T PLASTIC
704	P0602704	GEAR 27T CAST-IRON
706	P0602706	GEAR SHAFT
707	PEC10M	E-CLIP 9MM
708	P0602708	BALL OILER 6MM
711	P0602711	BRACKET
712	P0602712	T-NUT
713	P0602713	SPACER WASHER
714	P0602714	GEAR SHAFT
715	P0602715	KEYED BUSHING
716	P0602716	GEAR 127T
717	P0602717	GEAR 56T
718	P0602718	GEAR SHAFT CLIP
719	P0602708	BALL OILER 6MM
720	P0602720	BUSHING
721	PK97M	KEY 4 X 4 X 14
722	P0602722	SPACER RING

REF	PART #	DESCRIPTION
723	P0602723	GEAR 104T
724	PW03M	FLAT WASHER 6MM
725	PCAP85M	CAP SCREW M6-1 X 6
726	PLW04M	LOCK WASHER 8MM
727	PCAP12M	CAP SCREW M8-1.25 X 40
728	P0602728	GEAR 36T
729	P0602729	GEAR 36T
730	P0602730	GEAR 40T
731	P0602731	GEAR 44T
732	P0602732	GEAR 46T
733	P0602733	GEAR 48T
734	P0602734	GEAR 52T
735	P0602735	GEAR 45T
736	P0602736	GEAR 56T
737	P0602737	GEAR 60T
738	P0602703	GEAR 60T PLASTIC
739	P0602739	GEAR 104T
740	P0602740	GEAR 120T
741	P0602741	GEAR 127T



# Gearbox



# Gearbox Parts List

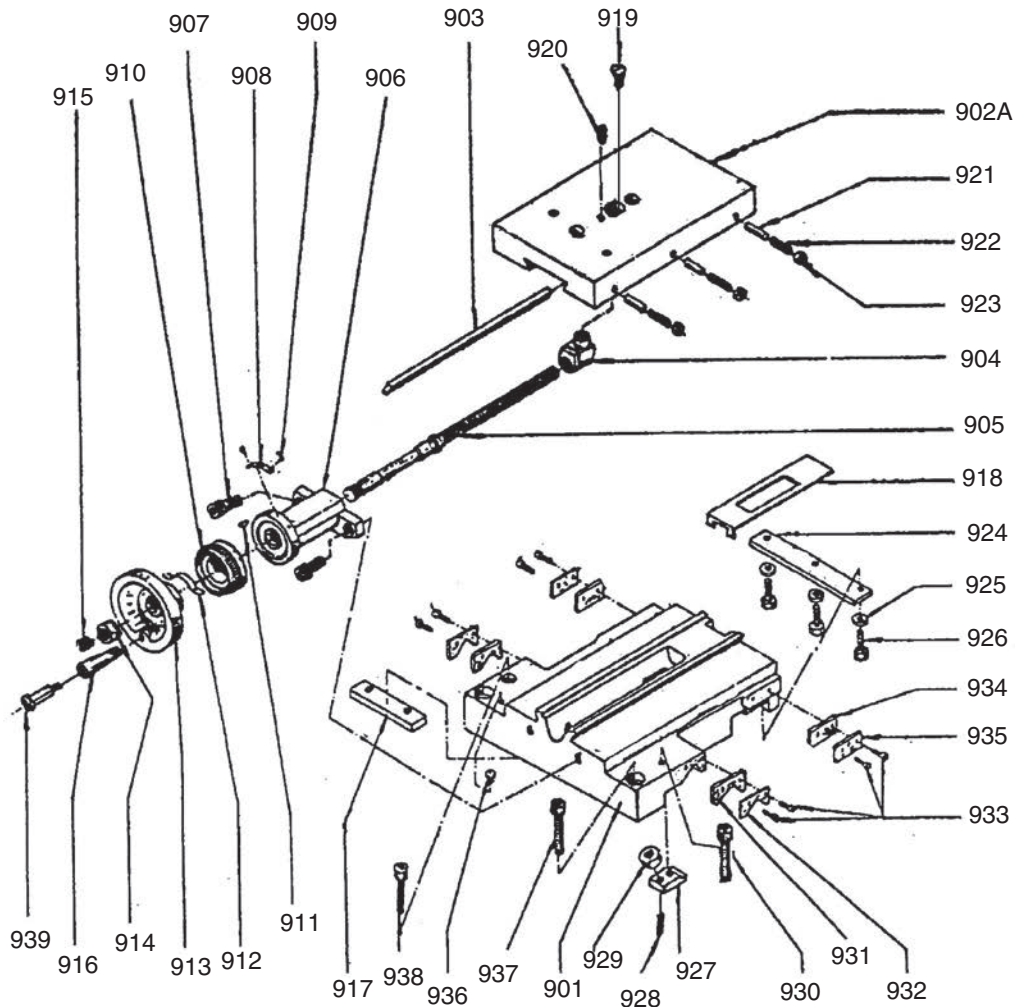
REF	PART #	DESCRIPTION
801	P0602801	PLUG
802	P0602802	O-RING
803	P0602803	BUSHING
804	P0602804	CLUSTER GEAR 30/36/33T
805	PK133M	KEY 4 X 4 X 50
806	P0602806	GEAR SHAFT
807	P0602807	BUSHING
808	P0602808	CLUSTER GEAR 22/44/33T
809	P0602809	CLUSTER GEAR PLUG
810	PCAP50M	CAP SCREW M5-.8 X 10
811	P0602811	REAR GEARBOX COVER
812	P0602812	FILL PLUG 3/8" NPT
813	P0602813	GEAR BOX CASE
814	P0602814	DRAIN PLUG 3/8" NPT
815	P0602815	SHEAR PIN 5 X 20
816	P0602816	LEADSCREW CONNECTING COLLAR
817	P0602817	SHEAR PIN 5 X 20
818	PCAP26M	CAP SCREW M6-1 X 12
819	P0602819	FLANGE
820	P6202-OPEN	BALL BEARING 6202-OPEN
821	P0602821	GEAR 33T
822	PR05M	EXT RETAINING RING 15MM
823	PK65M	KEY 4 X 4 X 8
824	P0602824	GEAR SHAFT 22T
825	P0602825	GEAR 44T

REF	PART #	DESCRIPTION
826	P0602826	COLLAR
827	PK132M	KEY 4 X 4 X10
828	P0602828	GEAR SHAFT
829	P0602829	GEAR 33T
830	P0602830	GEAR 30T
831	P0602831	GEAR 35T
832	P0602832	FLANGE
833	PCAP01M	CAP SCREW M6-1 X 16
834	P0602834	SHIFT FORK
835	P0602835	FRONT GEARBOX COVER
836	PRP05M	ROLL PIN 5 X 30
837	P0602837	COMPRESSION SPRING
838	P0602838	SIGHT GLASS A16
839	P0602839	POINTER DISC
840	PSS01M	SET SCREW M6-1 X 10
841	PSTB004M	STEEL BALL 5MM
842	P0602842	SHIFT HUB
843	PSS01M	SET SCREW M6-1 X 10
844	PCAP37M	CAP SCREW M6-1 X 50
845	PCAP02M	CAP SCREW M6-1 X 20
846	P0602846	O-RING 1.8 X 6.7
847	P0602847	SHAFT
848	PRP03M	ROLL PIN 5 X 20
849	P0602849	SHIFT LEVER
850	P0602850	SHIFT FORK





# Cross Slide & Carriage

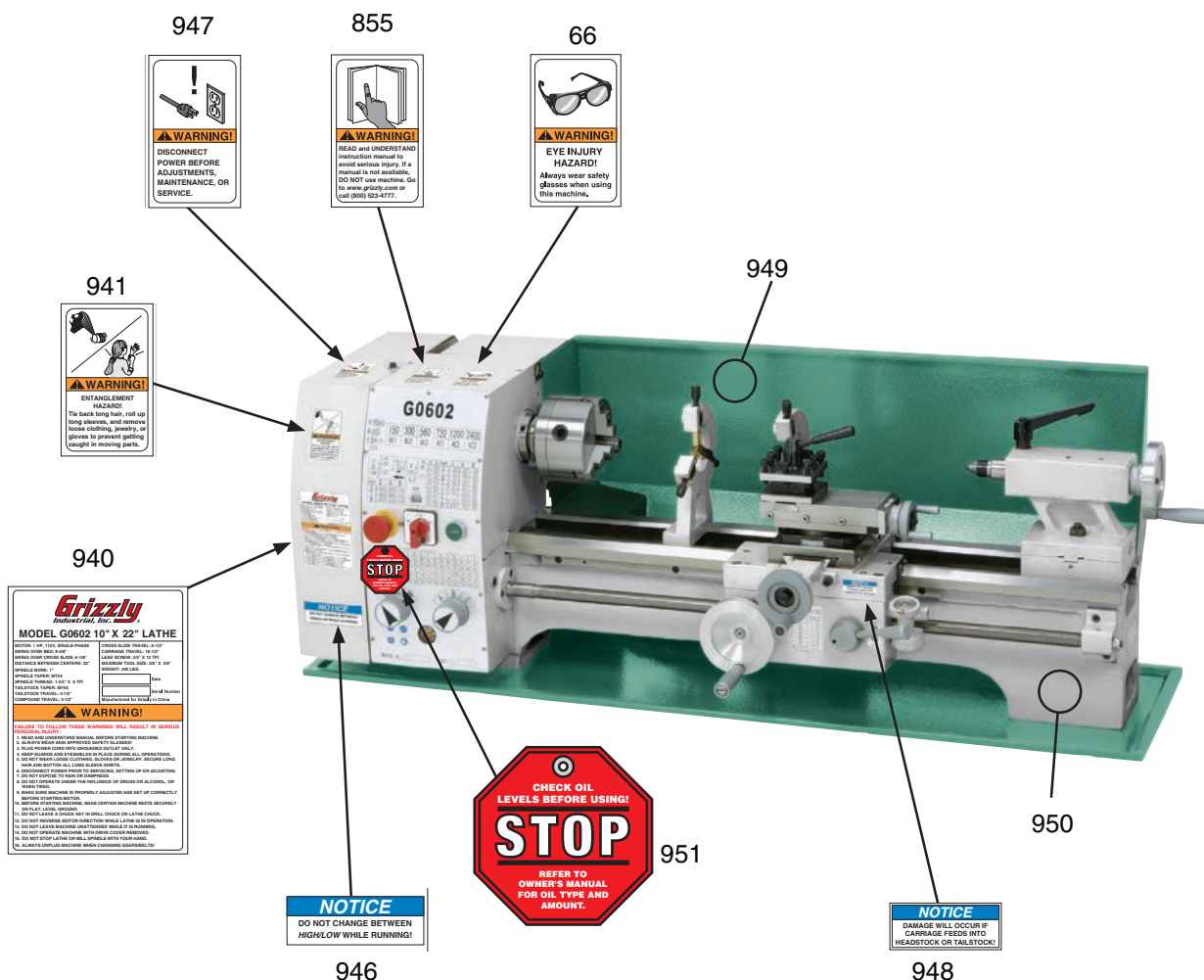


REF	PART #	DESCRIPTION
901	P0602901	SADDLE
902A	P0602902A	CROSS SLIDE W/O T-SLOTS V2.08.07
903	P0602903	CROSS SLIDE GIB
904	P0602904	CROSS SLIDE LEADSCREW NUT
905	P0602905	CROSS SLIDE LEADSCREW
906	P0602906	LEADSCREW BRACKET
907	PCAP31M	CAP SCREW M8-1.25 X 25
908	P0602908	INDICATOR PLATE
909	PRIV001M	RIVET 2 X 5MM STEEL FLUTED
910	P0602910	GRADUATED DIAL
911	PK105M	KEY 3 X 3 X 6
912	P0602912	SPRING PLATE
913	P0602913	CROSS SLIDE HANDWHEEL
914	P0602914	HANDWHEEL HEX NUT
915	PSS17M	SET SCREW M8-1.25 X 6
916	P0602916	CROSS SLIDE HANDWHEEL HANDLE
917	P0602917	SLIDE BLOCK
918	P0602918	CHIP GUARD
919	PCAP26M	CAP SCREW M6-1 X 12
920	PSS11M	SET SCREW M6-1 X 16

REF	PART #	DESCRIPTION
921	P0602921	DOWEL PIN
922	PSS34M	SET SCREW M5-.8 X 16
923	PN06M	HEX NUT M5-.8
924	P0602924	SADDLE TENSION BAR
925	PW03M	FLAT WASHER 6MM
926	PCAP01M	CAP SCREW M6-1 X 16
927	P0602927	SADDLE CLAMP PLATE
928	PSS25M	SET SCREW M6-1 X 20
929	PN01M	HEX NUT M6-1
930	PCAP48M	CAP SCREW M6-1 X 35
931	P0602931	V-WAY WIPER
932	P0602932	V-WAY WIPER COVER
933	PS07M	PHLP HD SCR M4-.7 X 8
934	P0602934	STRAIGHT WAY WIPER
935	P0602935	STRAIGHT WAY WIPER COVER
936	P0602936	BALL OILER 6MM
937	PCAP40M	CAP SCREW M8-1.25 X 35
938	PCAP48M	CAP SCREW M6-1 X 35
939	P0602939	HANDLE SCREW



# G0602 Labels & Cosmetic



## REF PART # DESCRIPTION

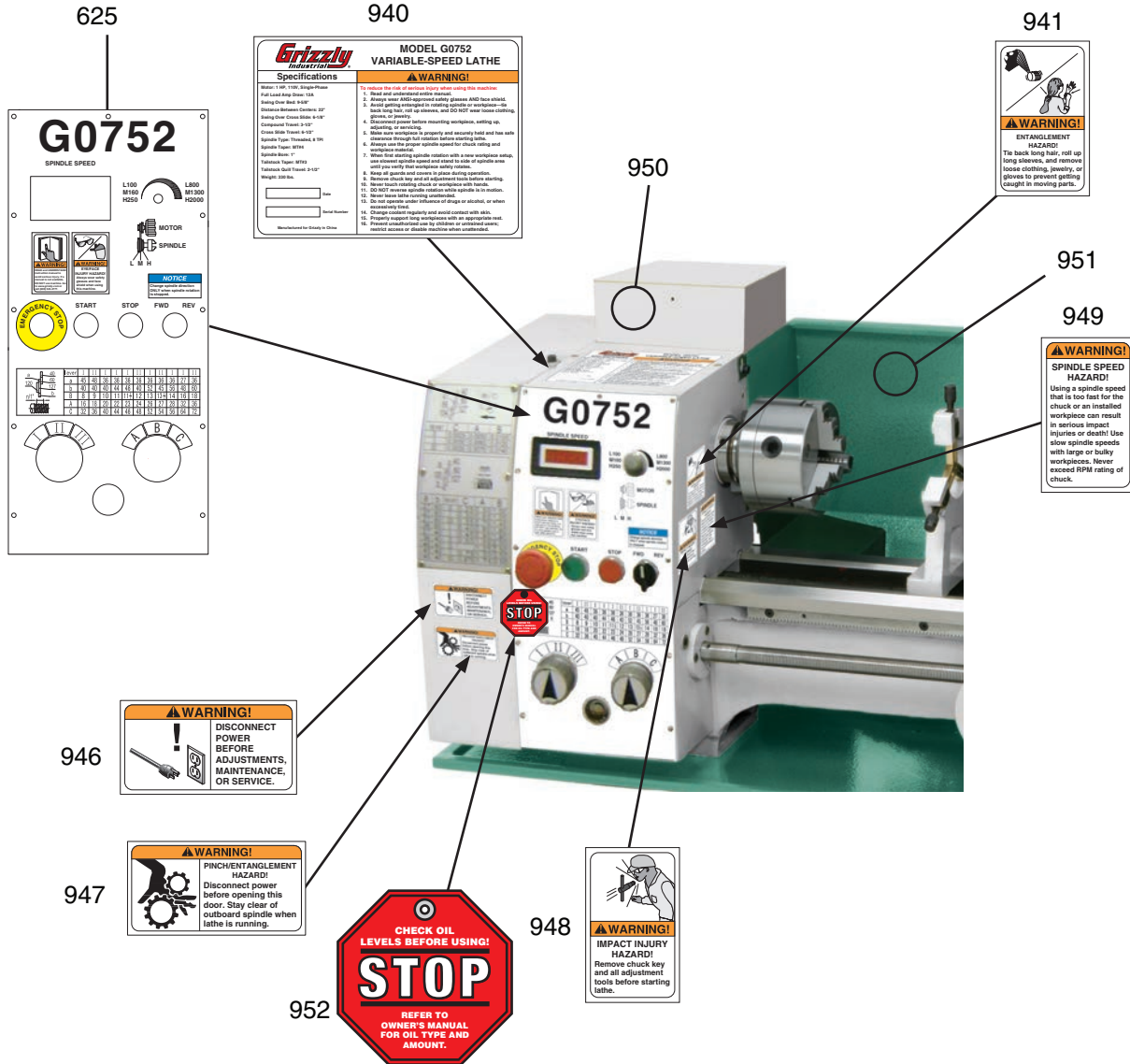
66	P0602066	SAFETY GLASSES LABEL ALUMINUM
855	P0602855	READ MANUAL LABEL ALUMINUM
940	P0602940	MACHINE ID LABEL ALUMINUM
941	P0602941	ENTANGLEMENT LABEL ALUMINUM
946	P0602946	SHIFT NOTICE LABEL ALUMINUM

## REF PART # DESCRIPTION

947	P0602947	DISCONNECT POWER LABEL ALUM
948	P0602948	CARRIAGE FEED DAMAGE LABEL ALUM
949	PPAINT-1	GRIZZLY TOUCH-UP PAINT
950	PPAINT-11	PUTTY TOUCH-UP PAINT
951	P0602951	STOP OIL FILL TAG



# G0752 Labels & Cosmetic



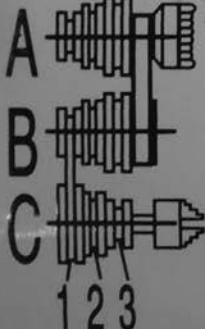
REF	PART #	DESCRIPTION
625	P0752625	G0752 CONTROL PANEL
940	P0752940	MACHINE ID LABEL
941	PLABEL-55A	ENTANGLEMENT LABEL
946	PLABEL-62C	DISCONNECT POWER LABEL
947	P0752947	ENTANGLEMENT-GEARS LABEL

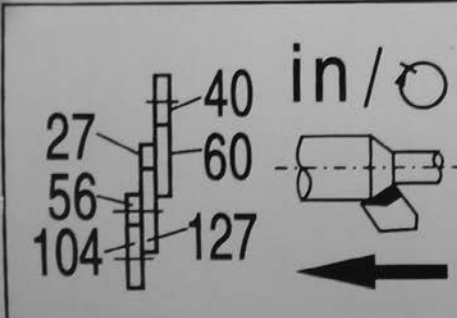
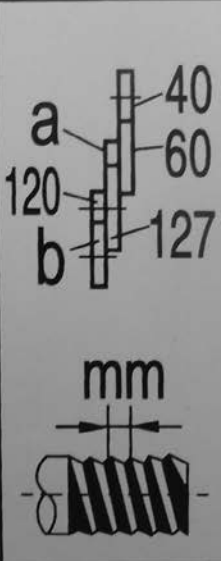
REF	PART #	DESCRIPTION
948	P0752948	IMPACT INJURY HAZARD LABEL
949	P0752949	SPINDLE SPEED HAZARD LABEL
950	PPAINT-11	PURTY TOUCH-UP PAINT
951	PPAINT-1	GRIZZLY GREEN TOUCH-UP PAINT
952	P0752952	STOP OIL FILL TAG

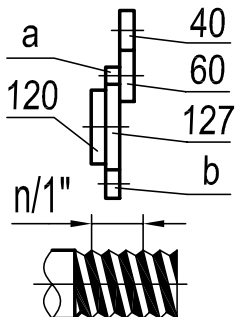


# SECTION 10: APPENDIX

## G0602 Charts

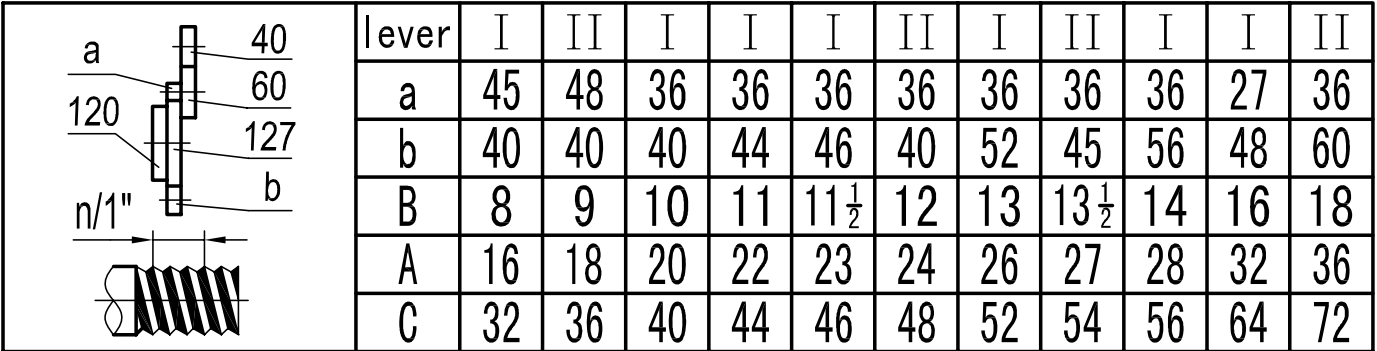
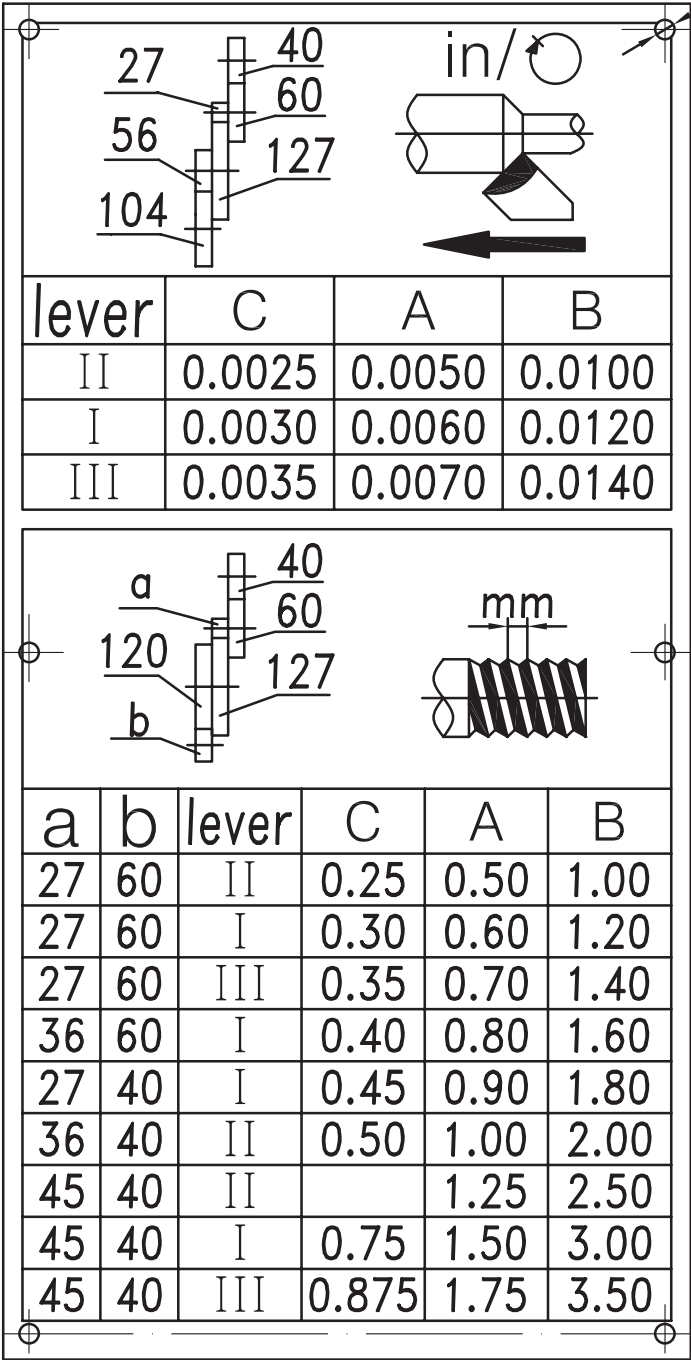
	150	300	560	720	1200	2400
	BC1	BC2	BC3	AC1	AC2	AC3

				a	b	lever	C	A	B
				27	60	II	0.25	0.50	1.00
				27	60	I	0.30	0.60	1.20
				27	60	III	0.35	0.70	1.40
				36	60	I	0.40	0.80	1.60
				27	40	I	0.45	0.90	1.80
				36	40	II	0.50	1.00	2.00
				45	40	II		1.25	2.50
				45	40	I	0.75	1.50	3.00
				45	40	III	0.875	1.75	3.50
lever	C	A	B						
II	0.0025	0.0050	0.0100						
I	0.0030	0.0060	0.0120						
III	0.0035	0.0070	0.0140						

	lever	I	II	I	I	I	II	I	II	I	I	II
	a	45	48	36	36	36	36	36	36	36	27	36
	b	40	40	40	44	46	40	52	45	56	48	60
	B	8	9	10	11	11½	12	13	13½	14	16	18
	A	16	18	20	22	23	24	26	27	28	32	36
	C	32	36	40	44	46	48	52	54	56	64	72



# G0752 Charts







# WARRANTY CARD

Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Phone # \_\_\_\_\_ Email \_\_\_\_\_  
Model # \_\_\_\_\_ Order # \_\_\_\_\_ Serial # \_\_\_\_\_

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. **Of course, all information is strictly confidential.**

1. How did you learn about us?

\_\_\_\_\_ Advertisement      \_\_\_\_\_ Friend      \_\_\_\_\_ Catalog  
\_\_\_\_\_ Card Deck      \_\_\_\_\_ Website      \_\_\_\_\_ Other:

2. Which of the following magazines do you subscribe to?

_____ Cabinetmaker & FDM	_____ Popular Science	_____ Wooden Boat
_____ Family Handyman	_____ Popular Woodworking	_____ Woodshop News
_____ Hand Loader	_____ Precision Shooter	_____ Woodsmith
_____ Handy	_____ Projects in Metal	_____ Woodwork
_____ Home Shop Machinist	_____ RC Modeler	_____ Woodworker West
_____ Journal of Light Cont.	_____ Rifle	_____ Woodworker's Journal
_____ Live Steam	_____ Shop Notes	_____ Other:
_____ Model Airplane News	_____ Shotgun News	
_____ Old House Journal	_____ Today's Homeowner	
_____ Popular Mechanics	_____ Wood	

3. What is your annual household income?

\_\_\_\_\_ \$20,000-\$29,000      \_\_\_\_\_ \$30,000-\$39,000      \_\_\_\_\_ \$40,000-\$49,000  
\_\_\_\_\_ \$50,000-\$59,000      \_\_\_\_\_ \$60,000-\$69,000      \_\_\_\_\_ \$70,000+

4. What is your age group?

\_\_\_\_\_ 20-29      \_\_\_\_\_ 30-39      \_\_\_\_\_ 40-49  
\_\_\_\_\_ 50-59      \_\_\_\_\_ 60-69      \_\_\_\_\_ 70+

5. How long have you been a woodworker/metalworker?

\_\_\_\_\_ 0-2 Years      \_\_\_\_\_ 2-8 Years      \_\_\_\_\_ 8-20 Years      \_\_\_\_\_ 20+ Years

6. How many of your machines or tools are Grizzly?

\_\_\_\_\_ 0-2      \_\_\_\_\_ 3-5      \_\_\_\_\_ 6-9      \_\_\_\_\_ 10+

7. Do you think your machine represents a good value?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

8. Would you recommend Grizzly Industrial to a friend?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?

**Note:** We never use names more than 3 times.

\_\_\_\_\_ Yes      \_\_\_\_\_ No

10. Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

FOLD ALONG DOTTED LINE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Place  
Stamp  
Here



GRIZZLY INDUSTRIAL, INC.  
P.O. BOX 2069  
BELLINGHAM, WA 98227-2069



FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____
Street_____
City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

# WARRANTY AND RETURNS

---

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.



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